DOCUMENT RESUME

ED 279 382 JC 870 142

AUTHOR Carter, Kathleen G.
TITLE An Articulation Model for Vocational Programs between a Secondary Area Vocational-Technical School and a Community College in Pennsylvania.
SPONS AGENCY Pennsylvania State Dept. of Education, Harrisburg. Bureau of Vocational Education.
PUB DATE Sep 85
NOTE 163p.; A cooperative effort between the Delaware County Area Vocational-Technical Schools and the Delaware County Community College.
PUB TYPE Reports - Research/Technical (143) -- Guides - Non-Classroom Use (055)

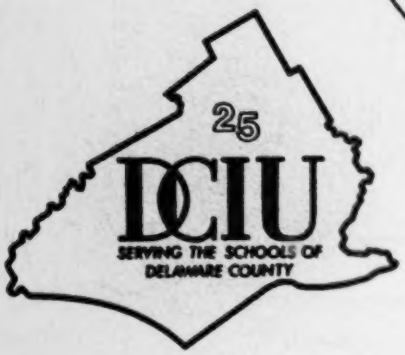
EDRS PRICE MF01/PC07 Plus Postage.
DESCRIPTORS *Articulation (Education); *College School Cooperation; Community Colleges; *Cooperative Planning; Cooperative Programs; Models; Program Descriptions; Program Development; Research Methodology; Two Year Colleges; *Vocational Education

ABSTRACT

A model is presented for the articulation of programs between a secondary vocational-technical school and a community college in Pennsylvania. First, the report describes how the model was developed and field-tested using a research and development methodology and a decision-facilitation evaluation model. Next, a literature review is presented, covering definitions of articulation, advantages of articulation, enhancers and inhibitors, existing models, techniques and recommendations, and research design. Steps in developing the model are examined next, including establishment of a research base, formation of a joint planning committee, selection of program, development of a policy statement, determination of field-test objectives, review of related literature, establishment of an advisory committee structure, and sequencing of activities. Next, the model for articulation is presented, with focus on the following components: (1) formation of an Articulation Advisory Committee (AAC); (2) preliminary meeting of faculties; (3) first meeting of the AAC; (4) inservice training to provide an orientation to competency-based vocational education, define the scope of the program, and select an occupational analysis; (5) verification of the occupational analysis; (6) incumbent worker survey; (7) determination and validation of terminal performance objectives; (8) development of plans for student recruitment, placement, and training and recruitment in industry; (9) development of criterion-referenced tests; (10) development of a plan for resource sharing; and (11) formal agreement. A bibliography is included. (EJV)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED279382



AN ARTICULATION MODEL FOR VOCATIONAL PROGRAMS BETWEEN A SECONDARY AREA VOCATIONAL-TECHNICAL SCHOOL AND A COMMUNITY COLLEGE IN PENNSYLVANIA

Kathleen G. Carter

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

K. G. Carter

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☐ This document has been reproduced as received from the person or organization originating it.

X ☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

A Cooperative Effort Between The Delaware County Area Vocational-Technical Schools And The Delaware County Community College

SEPTEMBER, 1985

Pennsylvania Department of Education, Bureau of Vocational Education, Vocational Program Support Services Section, Curriculum Projects, Contract 93-5011.

IC 870 142

BEST COPY AVAILABLE

AN ARTICULATION MODEL FOR VOCATIONAL PROGRAMS BETWEEN A SECONDARY AREA VOCATIONAL-TECHNICAL SCHOOL AND A COMMUNITY COLLEGE IN PENNSYLVANIA

Kathleen G. Carter

September, 1985

Pennsylvania Department of Education, Bureau of Vocational Education
Vocational Program Support Services Section, Curriculum Projects
Contract 93-5011

ELECTRONICS ARTICULATION ADVISORY COMMITTEE September, 1985

Mr. Arthur Babaian
Electronics Faculty
Delaware County Community College

Dr. Carol G. Bronk
Director, New Programs in Technologies
Delaware County Community College

Dr. Frances Carter
Industry-Education Coordinator
Delaware County Intermediate Unit

Dr. Kathleen G. Carter
Articulation Specialist
Delaware County Community College

Mr. Kenneth Clark
Branch Manager
Scopus Corporation

Mr. Robert Divins
Electronics Faculty
Delaware County Area Vocational-
Technical School, Folcroft

Mr. Robert Fenton
Director of Vocational-Technical Education
Delaware County Intermediate Unit

Mr. Harold Godwin
Professional Engineer
Philadelphia Electric Company

Mr. Frank Gorski
1984 graduate of Electronics Program
Delaware County Area Vocational-
Technical School, Marple

Mrs. Nancy Hebrank
Electronics Lab Technician
Delaware County Community College

Mr. James N. Keiler
Principal, Delaware County Area
Vocational-Technical School, Folcroft

Dr. Robert Klingler
Assistant Director of Vocational-
Technical Education
Delaware County Intermediate Unit

Mr. Larry Long
Production Services Supervisor
Mars Electronics

Mr. Joseph McGinn
Electronics Faculty
Delaware County Community College

Dr. Paul McQuay
Dean, Applied Sciences Division
Delaware County Community College

Mr. William Mozer
Executive Secretary
Private Industry Council

Dr. Ralph J. Patrick
Cdr., United States Navy Reserve

Mr. Vernon L. Register
Coordinator, Vocational Program Support
Services, Pennsylvania Department of
Education

Mrs. Ardemis S. Roy
Member, Pennsylvania Advisory Council on
Vocational Education and
Administrator, Vishay Electronics

Ms. Francia Sanders
Systems Specialist
CPU, Inc.

Mr. Robert Smith
Engineer, Scott Paper Company

Mr. Grant Snyder
Director, Assessment Center
Delaware County Community College

Mr. Joseph Walsh
Guidance Counselor, Delaware County
Area Vocational-Technical School,
Folcroft

Mr. Joseph Yankoski
Executive Director
Delaware County Office of Employment
and Training

PERSONNEL INVOLVED IN THE EVALUATION OF THE DEVELOPMENT AND FIELD-TESTING OF THE ARTICULATION MODEL

Mrs. Ave Cappa
Assistant Director
Center for Human Resource Development
Delaware County Community College

Dr. Geroge Cucore
Professor of Industrial Technology
Cheyney University

Mrs. Patsy T. Kirby
Principal
Delaware County Area Vocational-
Technical School, Marple

Dr. Robert E. Lees
Senior Teacher Educator
Department of Vocational Education
Temple University

Mr. John Nawn
Electrical Engineer
Philadelphia Electric Company

Ms. Dianne Paris
Field Resource Associate
Department of Vocational Education
Temple University

TABLE OF CONTENTS

Acknowledgements	i
Advisory Committee Members	ii
Education Personnel Evaluators	iii
Table of Contents	iv
List of Figures	v
INTRODUCTION	1
Significance of Study	2
Objectives of Study	3
REVIEW OF LITERATURE	4
Definition of Articulation	4
Advantages of Articulation	4
Enhancers	6
Inhibitors	6
Existing Models	6
Ideas, Techniques and Recommendations	8
Design of Research	8
METHODS	10
Developing the Model	10
Establishing Research Base	10
Formation of Joint Planning Committee	12
Selection of Program	13
Development of Policy Statement	13
Objectives of Field Test	16
Review or Related Literature	18
Advisory Committee Structure	18
Sequencing Activities	20
Field Testing the Model	21
THE MODEL FOR ARTICULATION	22
Formation of Articulation Advisory Committee	26
Preliminary Meeting of Faculties	31
First Meeting of Articulation Advisory Committee	37
Inservice 1: Orientation to Competency-Based Vocational Education	45
Inservice 2: Define the Scope of Program	49
Inservice 3: Select an Occupational Analysis	54

Verify an Occupational Analysis: Initial Review 58
Verify an Occupational Analysis: Pilot Test 63
Incumbent Worker Survey 65
Analysis of Incumbent Worker Survey Returns 72
Inservice 4: Revise and Write Terminal Performance Objectives 73
Validation of Terminal Performance Objectives 76
Coordinate Terminal Performance Objectives 80
Develop Plan for Student Recruitment 83
Develop Plan for Student Placement 88
Develop Plan for Training and Recruitment in Industry 94
Inservice 5: Develop Criterion-Referenced Tests 99
Develop Plan for Resource Sharing 102
Formal Agreement 106

SUMMARY 116

REFERENCES 117

BIBLIOGRAPHY 118

APPENDIX 123

LIST OF FIGURES

		Page
Figure 1	A Decision-Facilitation Plan for the Development of an Articulation Model	11
Figure 2	Committee Structure and Assignment	19
Figure 3	Meeting Schedule and Structure of Articulation Model	21
Figure 4	The Model for Articulation of Programs Between a Secondary Area Vocational-Technical School and a Community College in Pennsylvania	23
Figure 5	Procedures for Student Placement in the Articulated Program	89

Introduction

Vocational education supports the needs of local business and industry and prepares workers with entry level skills. The need for articulation of vocational programs is becoming more apparent due to growing local and national concerns for efficiency in education, rising costs of education, and demands from the public for accountability. Employment needs and trends have changed drastically in the last decade as high technology transformed many jobs.

Coordination of secondary and post-secondary programs was a major theme of the 1976 educational legislation. The 1983 efforts of the Pennsylvania Advisory Council on Vocational Education fostered, among other things, stronger business and industry linkages with vocational programs and articulation efforts between secondary and post-secondary and adult vocational education programs.

In 1983, the Pennsylvania Advisory Council on Vocational Education made a recommendation on articulation agreements. The recommendation was:

> 4. Articulation agreements between comprehensive schools, community colleges, colleges, universities and AVTS' should be established. These agreements should stimulate joint efforts in facilities utilization, curriculum planning, providing customized job training, utilizing business/industry contacts, etc. These agreements would be considered in the approval process for receiving state and federal vocational education funds (p. 13).

For the past several years, the Delaware County Community College and the Delaware County Area Vocational Technical Schools have been

cooperating and sharing resources in a number of ways, including intergenerational programming, adult vocational training, customized job training, craft advisory committees, equipment, facilities and staff. This relationship has been rewarding to both institutions. Informal articulation arrangements on an individual basis had been effected for several years. However, a more extensive and formal articulation plan was desired, one that would be replicable to all vocational programs between the two institutions and one that would serve as a model for Pennsylvania.

The emerging model is based on research conducted for a doctoral dissertation. The model was developed using a research and development methodology and contained a decision-facilitation evaluation model to monitor the development and field test of the model. The revised model, presented in this monograph, was modified as a result of formative and summative evaluation of the field test. Alternative actions, resulting from recommendations of the subcommittees or actual decisions made during the field test, are incorporated in the model to allow for flexibility in replicating the model.

Significance of the Study

The development of a model for articulation of programs between a secondary vocational-technical school and a community college assists in meeting a Pennsylvania priority need. The response of the Pennsylvania Department of Education to the Pennsylvania Advisory Council on Vocational Education's recommendation was that the State would "encourage the development and quality of articulation agreements" (Weis, 1983, p. 28).

Articulating programs between a secondary area vocational technical school and a community college would maximize the efforts and efficiency of our vocational system in Pennsylvania. This integration would be efficient and economical in terms of better use of facilities, staff and equipment, reduced length of study time, and the ability to address employer needs in a systematic plan.

Vocational education must work closely with employers, educators and entire communities to find ways to improve programs for students and reach high levels of effectiveness.

Objectives of the Study

The objectives of this study were:

1. To identify articulation concepts and strategies that have been successful in other articulation efforts.

2. To determine inhibitors and enhancers to articulation efforts and develop strategies to overcome barriers.

3. To develop a comprehensive model of articulation that contains basic components of articulation models as well as ideas and recommendations of recent studies.

4. To integrate into the model a decision-facilitation plan for evaluation of the model.

5. To field test the model using a selected program.

6. To revise the model based on field test results.

7. To prepare and disseminate a monograph that would enable vocational educators in Pennsylvania to achieve articulation.

Review of the Literature

In order to show the interrelationship of the diverse elements which are necessary to achieve articulation, a review of the literature was undertaken to determine the following: (a) a definition of articulation, (b) advantages of articulation, (c) inhibitors and enhancers of articulation, (d) existing models of articulation, and (e), ideas, techniques and recommendations of other studies.

Definition of Articulation

The review of the literature elicited many definitions of articulation. The broad definitions included common components such as coordination, cooperation, student benefit, and also described articulation as a process and an action. More narrow definitions focused on task level identification and matching. A common theme, however, among the definitions was the cooperative element and the benefit to the student.

Articulation can be defined as a systematic process between two or more levels of education sharing the same program which allows the student to move through a hierarchical program of occupationally-validated learning experiences and transfer from one institution to the next higher level without loss of credit or duplication of competencies.

Advantages of Articulation

Advantages to articulation include benefits to the student, advantages to the educational institution, and advantages to the taxpayer. Frequently cited advantages for the student included better

preparation for work, college credit for high school study, and elimination of duplication of course work. An added bonus could be the increased self-esteem for the secondary student because of college credit earned in the vocational-technical school. One study (Parsons, 1980) found that a significant number of students selected the program with articulation agreements, selected that particular college because of the agreements, made higher grades, and completed degree requirements earlier.

Advantages to the institution were another factor. Articulation favors the post-secondary institution, which benefits from the increased student enrollment. The images of both institutions can be enhanced in the communities when articulation efforts are publicized and carried out.

Economic factors were stressed by all authors. Reduction in funding for education, shrinking tax dollars, and demands for accountability pointed to the need for articulation agreements.

The possible advantages of articulation for the student are more efficient use of time and money, better preparation for work and enhanced self-esteem. Increased enrollment in articulated programs is an advantage to the post-secondary institution, while the possibility of advanced placement in a community college may increase enrollment at the secondary level. The cooperative efforts and communication of those efforts between the two institutions would affect their credibility in the community. Eliminating the duplication of courses, equipment and facilities, and producing better prepared employees for the workforce is an obvious savings to the community.

Enhancers of Articulation

There are common factors that contribute to the success of any articulation process. The most significant factors affecting articulation were attitude, communication, and cooperation. Successful articulation is the result of cooperation, beginning at the highest level between the institutions, an open and informative communication process between and among all individuals associated with the process, a willingness to share expertise, facilities and equipment, and the establishment of a local process for articulation.

Inhibitors of Articulation

There are many factors that act as barriers to articulation. They can be classified as individual and institutional. The factors that inhibit the articulation process at the individual level are lack of communication and cooperation and the inability of individuals to work toward a common goal. At the institutional level, factors that inhibit articulation are lack of administrative support, the attempt by institutions to remain autonomous while working with other institutions, the lack of recognition of previous education or work experience, and informal and confusing articulation arrangements.

Existing Models of Articulation

The review of the literature as it related to current models for articulation focused on state models, local models, and dissertation models. Dissertation abstracts, ERIC resources, educational research journals and periodicals were consulted.

Articulation plans, models and agreements exist in varying degrees of specificity in many states, both at the state level and at the local level. The development of articulation models and related articulation activities have been the subject of extensive research.

One researcher (Lloyd, 1979) ascertained through his analysis of eleven national and state articulation studies that the desirable characteristics of articulation plans include:

1. An administrative policy that provides for communication, coordination, joint planning and a joint admissions agreement.

2. An implementation/operation agreement that provides for joint coordinating committees, joint counseling activities, transfer credit provisions and a communication plan.

3. A coordinated curriculum that includes jointly coordinated program objectives, industry-based task analysis, continuous/sequenced curriculum content and job-related exit points.

4. An instructional delivery system that includes competency-based instruction, criterion-referenced evaluation measures, open entry at the receiving institution and individualized instruction.

5. A student assessment system for transfer credit that includes a joint advanced placement agreement, a student competency record, criterion-referenced test items and provisions for credit by both waiver and examination (pp. 63-65).

Recommendations from various studies and the Pennsylvania guidelines for curriculum development in vocational education include:

1. Inservice activities.

2. Task analysis used as the basis of curriculum development.

3. Verification of the task analysis by incumbent workers.

4. Validation of terminal performance objectives by business and industry representatives.

5. Evaluation of the process and product of the development of an articulation arrangement.

6. Evaluation of the product of the articulated program.

Ideas, Techniques and Recommendations of Other Studies

A review of the literature related to articulation efforts also includes a determination of ideas and techniques that have demonstrated positive results in articulation efforts in other communities. Several recommendations from related studies were also incorporated in the model developed in this study. Ideas related to leadership, communications, advisory committee structure, personnel involvement, inservice activities, instructional delivery system, criterion-referenced tests, resource sharing, credentialing procedures, and program selection for articulation were incorporated in this model.

Design of Research

Research and development is a strategy that relies on scientific evaluation of the product. This methodology has been accepted in educational research as an effective means of contributing to the body of knowledge relating to educational activities.

Any educational undertaking should be evaluated to assure that the objectives are being met and to provide for revision. Formative and summative evaluation data should be collected. There are several

evaluation models available that aid in decision making. Evaluation should be an integral component of an articulation process and should cover each dimension from inception to conclusion.

The focuses of the articulation studies reviewed in this study varied. Some studies focused on curriculum development and coordination while others focused on the method and procedures for credentialing students at the post-secondary level. Another focused on the administrative aspect of the articulation process.

An overriding theme of all the studies and plans indicated that the success of articulation efforts rests with the commitment of the individuals involved and the effectiveness of communications.

This study adds to that body of knowledge relating to the use of the research and development methodology for developing educational processes and the use of a decision-facilitation model for the evaluation of the development, field testing, and evaluation of educational products and processes. The articulation model developed in this study incorporates successful features and recommendations of existing models as reported in the literature, contains a field test component and an evaluation of the field test components, and has potential for replication using vocational-technical programs in similar institutions.

Methods

The research and development methodology presented by Borg and Gall (1979) was the research design used in this study. A decision-facilitation evaluation plan presented by Stufflebeam (1971) was the basis for the development, field-testing and evaluation of the model. Strategic evaluation points provided input to determine the validity of the emerging model. The decision-facilitation evaluation model provided for evaluation by education personnel who served on the Joint Planning Committee, the Articulation Advisory Committee, or representatives of the institutions involved. This plan is presented in Figure 1 on the next page.

Developing the Model

The development of the model encompassed two phases. The context phase included establishing a research base, forming a joint planning committee, establishing the need, selecting the program, and developing objectives. The input phase included reviewing related literature to identify resources, personnel and strategies, developing structure, and sequencing activities.

Establish a Research Base

A research base was established by Carter (1985) and included definitions of articulation, enhancers and inhibitors to articulation, advantages of articulation, an analysis of recent state and local articulation plans, and a determination of ideas, techniques and recommendations that would facilitate articulation. A summary of these findings is presented in the previous section entitled, Review of the Literature.

A DECISION-FACILITATION PLAN
FOR THE DEVELOPMENT OF AN ARTICULATION MODEL

DEVELOPING THE MODEL

Context	Input
Establish Research Base	Review Related Literature
Form Joint Planning Committee	Identify Resources, Personnel and Strategies
Establish Need	
Select Program	Develop Structure
Develop Objectives	Sequence Activities
Develop Evaluation Questions	Develop Evaluation Questions
EVALUATE	EVALUATE

FIELD TESTING THE MODEL

Process

Conduct Meetings and Evaluate Based on Objectives
Monitor Progress of Project
Detect Defects in Structure, Strategies; Evaluate, Revise
Keep Records of Events of Meetings
Collect Formative Data

EVALUATING THE MODEL

Product

Preparation and Presentation of Subcommittee Reports
Acceptance of Formal Agreement
Overall Evaluation of Field Test Phase (Summative Evaluation) by Articulation Advisory Committee and Non-Project Education Personnel Based on Original Objectives Developed in Context Phase

FIGURE 1

Formation of a Joint Planning Committee

Representatives from the Delaware County Area Vocational-Technical School and Delaware County Community College formed a Joint Planning Committee to facilitate the development, field-testing, evaluation, and implementation of the articulation model. The representatives were selected because of their position with their respective institutions and their contribution to efforts to continue a viable working relationship between the two levels of instruction. The Joint Planning Committee members were:

Dr. Robert Klingler, Assistant Director of Vocational Technical Education for the Delaware County Intermediate Unit, Media, Pennsylvania, represented the Delaware County Vocational-Technical Schools. Three area vocational-technical schools in Delaware County are administered by the Delaware County Intermediate Unit.

Dr. Paul McQuay, Dean, Applied Sciences Division, Delaware County Community College, represented Delaware County Community College. Many of the comparable programs at the secondary level are housed in the Applied Sciences Divisions.

Dr. Carol G. Bronk, Director, New Programs in Technologies, Delaware County Community College, also represented Delaware County Community College. Dr. Bronk developed informal articulation arrangements with the area vocational-technical schools for several years.

Kathleen G. Carter, Articulation Specialist, Delaware County Community College, facilitated the articulation activities of this project.

Mr. Vernon Register, Coordinator of Exemplary Programs, Bureau of Vocational Education, Pennsylvania Department of Education, served as an ex officio member of the Joint Planning Committee.

The Joint Planning Committee developed a policy statement for articulation between the two institutions, served on all future subcommittees of the Articulation Advisory Committee, assisted the subcommittees in achieving objectives, and made binding decisions when negotiation failed and consensus was not reached.

Select Program for Articulation

A review of the literature related to program selection for articulation revealed the program must beet specific criteria. The program must be available in both levels, represent a growing occupation, have the capability of coordination with easily identified occupational tasks, and have the leadership to facilitate the articulation process.

Develop a Policy Statement

The policy of articulation, developed in the preliminary planning stages of the articulation process, became the philosophy for articulation activities that culminated in a formal agreement between the two institutions. The Joint Planning Committee met to formulate a policy statement that included the philosophy and procedures necessary to develop an articulation agreement.

A sample of the policy statement is presented on the following page.

POLICY STATEMENT TO DEVELOP AN ARTICULATION AGREEMENT BETWEEN THE DELAWARE COUNTY INTERMEDIATE UNIT AND DELAWARE COUNTY COMMUNITY COLLEGE

Delaware County Community College and the Delaware County Intermediate Unit believe they have an obligation to place students at the proper educational level to enhance student success, to recognize individual differences or accomplishments, and to avoid duplication of efforts between the Vocational-Technical Centers and the Community College, and toward that end, will develop and implement procedures resulting in an agreement between the Delaware County Intermediate Unit and Delaware County Community College.

The purpose of the agreement will be to maximize the opportunities for the students who successfully complete the Electronics Technology Program at the Delaware County Area Vocational-Technical Schools of the Delaware County Intermediate Unit by offering advanced placement in the Electronics Technology Program offered at Delaware County Community College.

Delaware County Community College and the Delaware County Intermediate Unit support the concept of articulation as a means of improving student mobility between and among the secondary and post-secondary levels. Furthermore, the administrators and faculties are expected to take those actions appropriate to facilitate articulation between the two institutions.

Persons with direct responsibility to carry out the directions of this policy, develop and implement procedures, and prepare a formal agreement of articulation are Dr. Paul McQuay, Dean, Applied Sciences Division, Delaware County Community College, and Dr. Robert Klingler, Assistant Director of Vocational-Technical Education, Delaware County Intermediate Unit.

This Statement of Policy is accepted this _____ day of September, 1984.

_____	_____
Paul McQuay, Dean Applied Sciences Division Delaware County Community College	Robert Klingler Assistant Director of Vocational-Technical Education, Delaware County Intermediate Unit

Objectives of the Field Test of the Articulation Model

The objectives of the field test of the articulation model, based on the review of the literature, included:

1. Establish an articulation advisory committee of secondary, community college and industrial personnel.

2. Conduct inservice training sessions for secondary vocational and community college personnel related to competency-based curriculum development and other topics identified by the Joint Planning Committee.

3. Integrate the competency-based objectives of the articulated program of the two institutions with the tasks identified for entry level in the selected occupational area.

3.1. Define the scope of the program.

3.2. Review and select an occupational analysis.

3.3. Verify an occupational analysis.

3.3.1. Conduct an incumbent worker survey.

3.4. Write terminal performance objectives.

3.5. Validate terminal performance objectives based on industry requirements for entry level workers.

3.6. Coordinate terminal performance objectives into the college's occupational program courses.

3.7. Develop criterion-referenced tests.

4. Integrate into the articulation process a plan for employer assistance in recruitment and training.

4.1. Develop a plan for recruitment of students.

4.2. Develop a plan for training by identifying industrial resources available for training.

5. Prepare a plan for the cooperative use of facilities, equipment, and staff at the educational and industrial locations.

5.1. Identify resources of each institution.

5.2. Identify resources needed.

6. Establish procedures for recruitment and admissions into the articulated program.

6.1. Develop plans for recruitment of students at the secondary level.

6.2. Develop plans for recruitment of students who have graduated from the secondary program and/or have work experience in related occupations.

6.3. Establish procedures to facilitate admissions of students into the articulated program.

7. Establish policy and procedures in a formal agreement for articulation of the occupational program at Delaware County Community College and the Delaware County Area Vocational-Technical Schools.

7.1. Incorporate recommendations of other subcommittees in the formal agreement.

7.2. Present formal agreement to governing boards of both institutions.

8. Evaluate the articulation process based upon input from advisory committee members, non-committee educational personnel, students, and employers.

8.1. Evaluate the development phase of the model for articulation.

8.2. Evaluate the proposed model.

8.3. Evaluate the field test of the model.

8.4. Evaluate the products of the articulation project.

Review Related Literature

The ideas, techniques and recommendations of other articulation studies reviewed in this study provided the basis for committee structure, personnel involvement, and strategies designed to facilitate articulation.

Advisory Committee Structure

The structure developed for this model is based on successful activities in local and state models for articulation analyzed during this study. A committee structure that addressed all the needs of the model, that is, the administrative input, the business/industry/military input, the support services input, and the faculty input, was developed and is presented in Figure 2. The primary focus of the articulation process in this study was the coordinated competency-based curriculum developed by the Delaware County Area Vocational Technical Schools faculty and the Delaware County Community College faculty and validated by the business/industry/military component. However, if these activities have recently been undertaken by institutions wishing to replicate this model, a provision is included to eliminate this phase. The need to include other areas of educational

COMMITTEE STRUCTURE AND ASSIGNMENT

JOINT PLANNING COMMITTEE

Dean, Applied Sciences Division, Delaware County Community College
Assistant Director of Vocational Education, Delaware County Intermediate Unit
Director, New Programs in Technologies, Delaware County Community College
Articulation Specialist, Delaware County Community College
Coordinator of Exemplary Programs, Bureau of Vocational Education, Pennsylvania Department of Education

ARTICULATION ADVISORY COMMITTEE

SUBCOMMITTEES

PROGRAM	BUSINESS/INDUSTRY/ MILITARY	ADMINISTRATIVE	SUPPORT SERVICES
Joint Planning Committee	Joint Planning Committee	Joint Planning Committee	Joint Planning Committee
Electronics faculty, both institutions	Representatives of business, industry, military; owners, supervisors and entry level workers	Vice President of Instruction, DCCC	Guidance Counselor, DCAVTS
		Acting Director of Vocational Education, DCIU	Assessment Center Director, DCCC
		Principal, DCAVTS	

DCCC - Delaware County Community College

DCIU - Delaware County Intermediate Unit

DCAVTS - Delaware County Area Vocational-Technical Schools

FIGURE 2

administration in the initial articulation activities is addressed by enlisting guidance, placement, and administrative personnel on the advisory committee.

Sequencing Activities

After the committee structure was developed to address the resources, personnel, and strategies determined to be successful in previous articulation efforts, the activities necessary to accomplish the articulation were identified and sequenced. The resulting schedule of events, illustrated in Figure 3, provided the framework for the model as well as a timeline to accomplish the necessary tasks. The focus of the schedule was to provide maximum input in a minimum of meetings. In order to develop the schedule of activities it was necessary to utilize the school calendars for both institutions as well as to determine when the Delaware County Intermediate Unit Board of School Directors and the Delaware County Community College Board of Trustees met.

MEETING SCHEDULE AND STRUCTURE OF ARTICULATION MODEL

SUGGESTED TIMELINE: 10 MONTHS

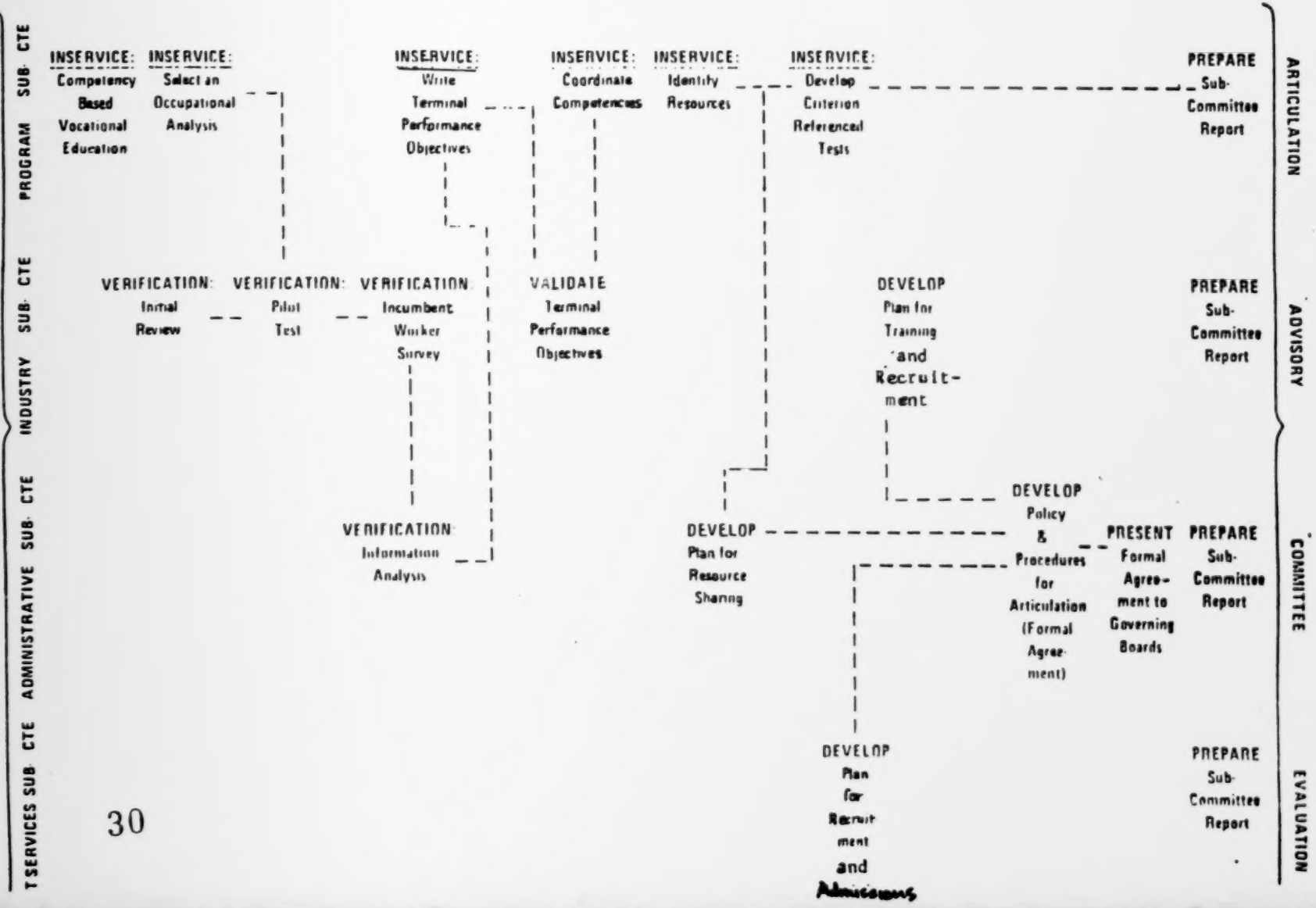


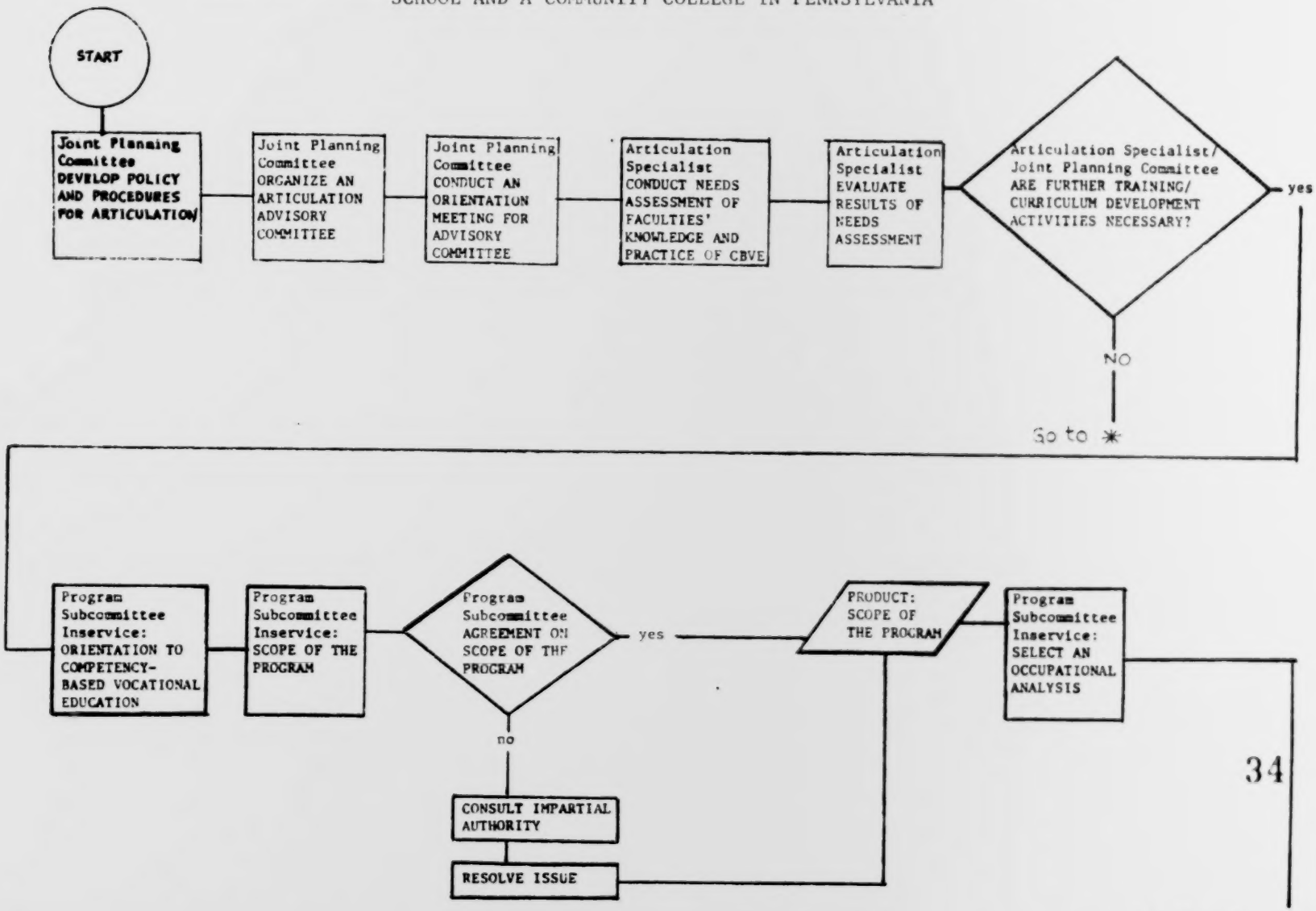
FIGURE 3

Field Testing the Model

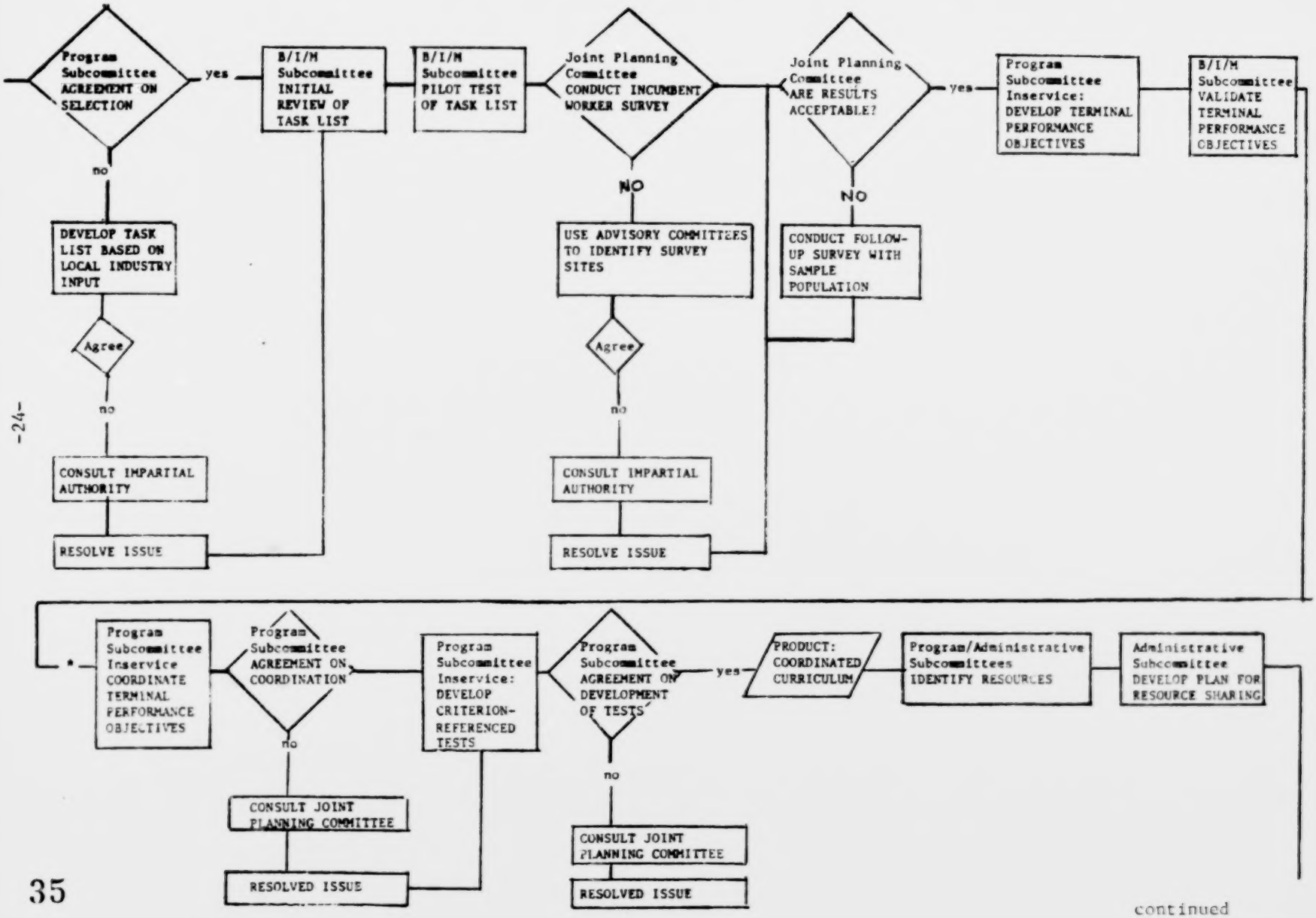
The process evaluation component of the decision-facilitation model, illustrated in Figure 1, p. 11, monitored the progress of the field test. This component was designed to detect defects in structure and strategies, and allow for revisions, if necessary, in the structure, sequencing, and scheduling of articulation activities. The field test of the model provided for the collection of formative data in the form of notes, evaluation forms, correspondence, and memoranda related to conducting and evaluating meetings and mailings, and provided detailed recordkeeping of the events carried out in the field test. The data collected during the field test and subsequent evaluation activities provided the basis for the branching of the emerging model, presented in Figure 4. This model, capable of replication in similar institutions, will be discussed in detail in the following section. Samples of agreements, correspondence, memoranda, agenda, presentation outlines and transparency masters are provided for guidance and/or duplication.

FIGURE 4

MODEL FOR ARTICULATION OF PROGRAMS BETWEEN A SECONDARY AREA VOCATIONAL-TECHNICAL SCHOOL AND A COMMUNITY COLLEGE IN PENNSYLVANIA


START
Joint Planning Committee DEVELOP POLICY AND PROCEDURES FOR ARTICULATION
Joint Planning Committee ORGANIZE AN ARTICULATION ADVISORY COMMITTEE
Joint Planning Committee CONDUCT AN ORIENTATION MEETING FOR ADVISORY COMMITTEE
Articulation Specialist CONDUCT NEEDS ASSESSMENT OF FACULTIES' KNOWLEDGE AND PRACTICE OF CBVE
Articulation Specialist EVALUATE RESULTS OF NEEDS ASSESSMENT
Articulation Specialist/ Joint Planning Committee ARE FURTHER TRAINING/ CURRICULUM DEVELOPMENT ACTIVITIES NECESSARY?
yes
NO
Go to ✷
Program Subcommittee Inservice: ORIENTATION TO COMPETENCY-BASED VOCATIONAL EDUCATION
Program Subcommittee Inservice: SCOPE OF THE PROGRAM
Program Subcommittee AGREEMENT ON SCOPE OF THE PROGRAM
yes
no
CONSULT IMPARTIAL AUTHORITY
RESOLVE ISSUE
PRODUCT: SCOPE OF THE PROGRAM
Program Subcommittee Inservice: SELECT AN OCCUPATIONAL ANALYSIS

continued

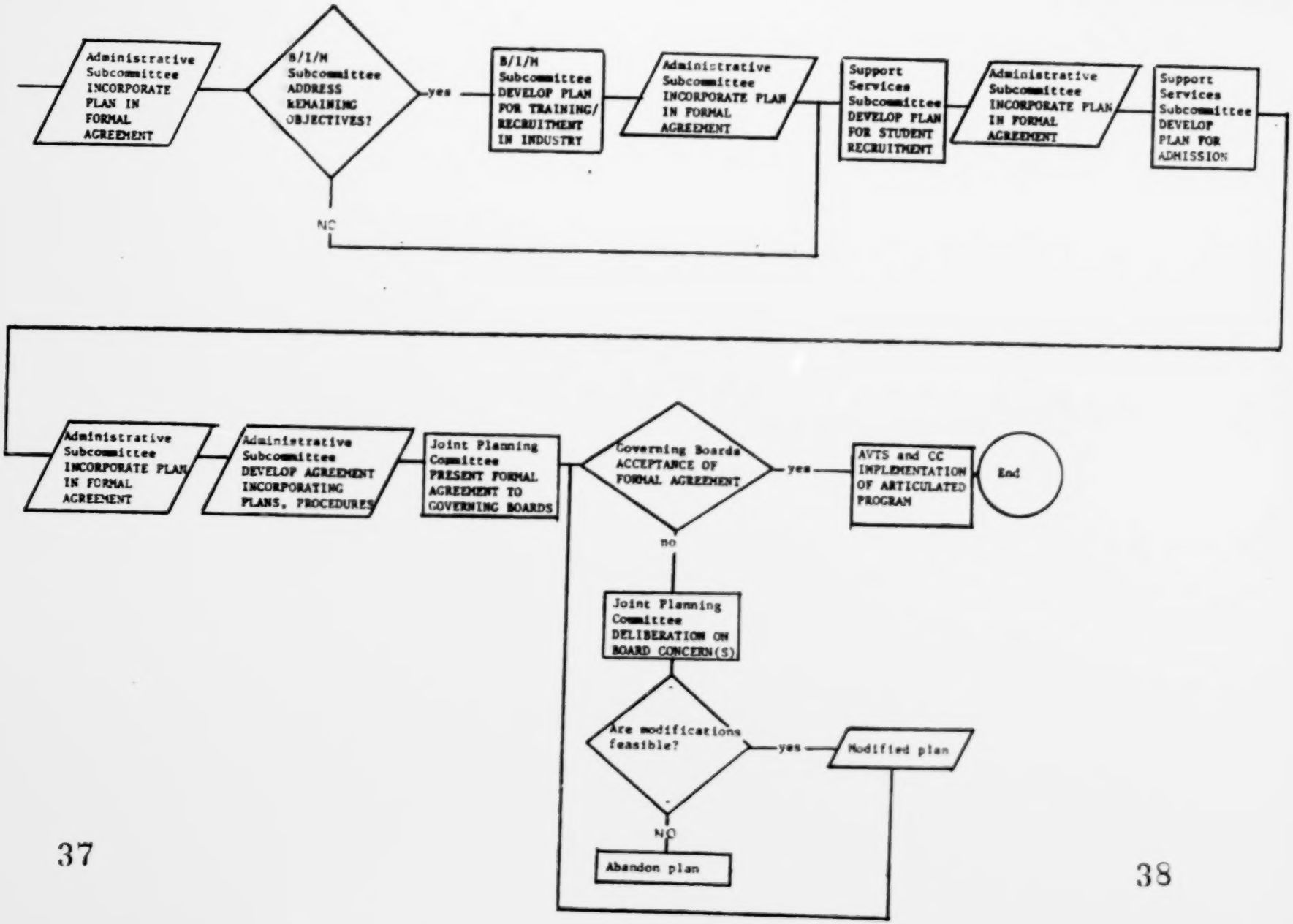


-24-

35

36

continued


Administrative Subcommittee INCORPORATE PLAN IN FORMAL AGREEMENT
B/I/M Subcommittee ADDRESS REMAINING OBJECTIVES?
yes
NO
B/I/M Subcommittee DEVELOP PLAN FOR TRAINING/ RECRUITMENT IN INDUSTRY
Administrative Subcommittee INCORPORATE PLAN IN FORMAL AGREEMENT
Support Services Subcommittee DEVELOP PLAN FOR STUDENT RECRUITMENT
Administrative Subcommittee INCORPORATE PLAN IN FORMAL AGREEMENT
Support Services Subcommittee DEVELOP PLAN FOR ADMISSION
Administrative Subcommittee INCORPORATE PLAN IN FORMAL AGREEMENT
Administrative Subcommittee DEVELOP AGREEMENT INCORPORATING PLANS, PROCEDURES
Joint Planning Committee PRESENT FORMAL AGREEMENT TO GOVERNING BOARDS
Governing Boards ACCEPTANCE OF FORMAL AGREEMENT
yes
AVTS and CC IMPLEMENTATION OF ARTICULATED PROGRAM
End
no
Joint Planning Committee DELIBERATION ON BOARD CONCERN(S)
Are modifications feasible?
yes
Modified plan
NO
Abandon plan

Formation of Articulation Advisory Committee

The Joint Planning Committee assisted in the formation of the Articulation Advisory Committee. Prospective members of the advisory committee were identified by the Joint Planning Committee and selected in accordance with the committee structure necessary to effect articulation and discussed in the previous section, Advisory Committee Structure, and outlined in Figure 2. Prospective members represented the Delaware County Area Vocational-Technical Schools and Delaware County Community College as administrators, faculty and guidance personnel. Business, industry and military education leaders were officers, supervisors and entry level workers. Several members served on craft advisory committees of each institution. Two volunteered as a result of local publicity on articulation efforts. Others were selected based on recommendations found in the review of the literature. The military representative was invited to participate by Delaware County Community College. The college had recently made application to become a Navy Vocational-Technical Center. It was therefore appropriate to include a military campus liaison on the advisory committee since electronics preparation is one of the areas the Navy seeks for its recruits.

When a list of prospective members for the Electronics Articulation Advisory Committee was assembled, members of the Joint Planning Committee contacted the prospective member by telephone to invite participation. A letter of confirmation was sent to each accepting member. A news release was prepared announcing the formation of the advisory committee

Two weeks prior to the Articulation Advisory Committee Meeting a letter was sent to members notifying them of the time and place of the meeting.

Samples of the letter of confirmation, a news release, and a notice of the first meeting are presented in the following pages.

NEWS RELEASE

9/20/84

RE: FORMATION OF ELECTRONICS ARTICULATION ADVISORY COMMITTEE

Media -- Dr. Richard De Cosmo, president of Delaware County Community College, and Mr. Almon Wilson, Executive Director of the Delaware County Intermediate Unit, announced the formation of an Electronics Articulation Advisory Committee. This committee will serve for the duration of the project which is expected to be completed by June, 1985.

The major objective of this committee will be to develop policy and procedures that will grant college credit and advanced placement to vocational-technical high school students who wish to further their education at Delaware County Community College. In addition, the same policy and procedures will be available to people who are working in related fields and wish to continue their studies at the college. The committee will work to insure that high quality educational opportunities will continue to be available to all members of the community.

The members of the Electronics Articulation Advisory Committee are:

(List attached.)

This committee will provide the Joint Planning Council of both institutions with advice and assistance on matters relating to the coordination of the electronics program. Committee members are teachers, administrators and support personnel from both institutions, and business, industry, and military representatives. This vital business and industry linkage will insure that the electronics courses are relevant to the needs of the community and that students will be better prepared to enter the workforce.

LETTER OF CONFIRMATION September 11, 1984

XXXX
XXXX
XXXX

Dear :

We are pleased to inform you of your appointment to the Electronics Articulation Advisory Committee. We wish to thank you for your willingness to serve on this committee.

Articulation of programs between secondary and post-secondary institutions is a vital component of quality vocational education. Articulation is a process which permits the smooth transfer and progression of students from one educational level to the next higher level through a coordinated and interrelated curriculum.

We hope, through the efforts of the Electronics Articulation Advisory Committee, to develop policy, procedures, and a formal agreement between our two institutions. Your active attendance and participation in the committee's work will be influential in helping to make our community a better place in which to work and live.

The outcome of the project will be an agreement between Delaware County Area Vocational-Technical Schools and the Delaware County Community College that will grant college credit and advanced placement to vo-tech students who wish to further their education at Delaware County Community College. In addition, qualified persons with work experience in the electronics field can take advantage of advanced placement opportunities.

Shortly, you will be notified by Kay Carter, the Articulation Specialist for this project, about the time, place, date and agenda for the first meeting of the committee. This meeting will help you better understand the role and function of the committee and your potential contributions to the project. You will have an opportunity to meet other members of the committe, school administration and instructional staff. At this first meeting, objectives of the committee and the articulation process will be discussed.

Thank you again for your interest in continuing our efforts to provide quality course offerings to our students. Through the committee members, all citizens in the county will have an additional communication link with the vocational technical schools and the community college.

Very truly yours, Very truly yours,

Robert D. Klinger Paul McQuay

NOTICE OF FIRST MEETING

September 15, 1984

XXX

XXX

XXX

Dear :

The first meeting of the Electronics Articulation Advisory Committee will be held on Tuesday, September 25, 1984, at Delaware County Community College. We will meet from 4 p.m. to 6 p.m. in Conference Room L-411.

This meeting will help you to understand the role of the committee and the objectives of the project. You will have an opportunity to meet with the administration of both institutions as well as other committee members.

I look forward to working with you on this exciting project. Thank you for your willingness to serve on this committee.

Very truly yours,

Kay Carter
Articulation Specialist

Preliminary Meeting of Faculties

Electronics teachers from the Delaware County Area Vocational-Technical Schools and Delaware County Community College were informed of the articulation project and their role in it by their respective member of the Joint Planning Committee. A letter advising the time and place of their first meeting, and the materials to be brought to the meeting was sent. An appropriate agenda was developed. A needs assessment instrument was administered at this introductory meeting. As a result of this needs assessment, topics identified for inservice activities included:

1. Defining, or agreeing upon, the scope of the occupation.
2. Sharing, reviewing, and revising task analyses.
3. Preparing terminal performance objectives.
4. Validating terminal performance objectives.
5. Coordinating the terminal performance objectives of both institutions within the framework of the college's occupational program.
6. Preparing criterion-referenced cognitive and performance tests.

As noted on the model illustrated in Figure 4, if recent competency-based curriculum development activities have taken place at both institutions, the administration of the needs assessment and the curriculum development activities can be eliminated.

Samples of the notice of the first meeting, an agenda, an outline of the presentation, and the needs assessment instrument are presented in the following pages.

M E M O R A N D U M

TO: Art Babaian
Bob Divins
Joe McGinn

DATE: September 1, 1984

FROM: Kay Carter, Articulation Specialist

RE: Electronics Articulation Project

The initial meeting of the teachers from the vocational-technical school and the community college will be on Monday afternoon, September 10, 1984, at 4 p.m. The meeting will be held in Room A-119 at Delaware County Community College.

Please bring with you your course outline, task list and a student competency record. If you use a particular textbook or commercially prepared materials, please bring them along.

I will present an overview of the articulation process and we will discuss your role in it. We will then prepare a schedule for the semester.

I look forward to working with you on this exciting and innovative project.

CC: Joint Planning Committee

ARTICULATION PROJECT

Initial Meeting of Teachers of Both Institutions

Tuesday, September 10, 1984, A-119, DCCC

Topic: Overview of the Articulation Project

A G E N D A

Introductions

Remarks

Overview of the Articulation Process, including Teachers' Roles

- Definition
- Process
- Needs Assessment
- Final Product

Description of Program and Instructional Materials Used (Each Teacher)

Needs Assessment for Workshop Planning

Proposed Schedule of Inservice Activities for Fall, 1984

Reading Material for Next Meeting

Evaluation of Meeting

Adjournment

OUTLINE OF PRESENTATION

Overview of Project

- Definition of Articulation (Transparency 1, 2)*
- Advantages of Articulation (Transparency 3)
- Process of Articulation
  - Committee Structure (Transparency 4)
  - Stages of Articulation (Transparency 5)
  - Program Subcommittee (Transparency 6, 7)
- Inhibitors and Enhancers of Articulation
  - Inhibitors (Transparency 8)
  - Enhancers (Transparency 9)
- Summary of Overview of the Articulation Process (Transparency 10)

Needs Assessment

- Purpose of Needs Assessment
- Procedures for Needs Assessment

*Transparency masters are contained in the Appendix.

ARTICULATION PROJECT

Initial Meeting of Teachers of Both Institutions

COMPETENCY-BASED VOCATIONAL EDUCATION ASSESSMENT FORM

Please respond to the following statements. Your responses will assist in developing inservice topics for the articulation process. If you answer "Yes" to a particular statement, please describe in detail your activities in that area.

	NO	YES	DEGREE ACTIVITIES
1. I have used the Dictionary of Occupational Titles and the Occupational Outlook Handbook to establish the scope of my program.			
2. I am aware of the employment opportunities now and in the near future in this geographic area for electronics technicians.			
3. I am familiar with publications and resource persons who can provide labor market information.			
4. I have seen community survey data related to vocational program interest.			
5. I have been involved in formal and informal student follow-up surveys related to my program.			
6. I am up-to-date on the resources, equipment and facility changes required in my program.			
7. I have been actively involved in defining the scope of my vocational program.			
8. I am familiar with the components of a program description.			

	NO	YES	DEGREE ACTIVITIES
9. When reviewing an occupational analysis, I know what factors are important.			
10. I understand task statements on an occupational analysis must be stated in observable, measurable worker behavior.			
11. I am familiar with the terms "domain", "duty", "task", "step", and "substep".			
12. I have used a hierarchical form to organize a single occupation.			
13. I have written objectives that explicitly state performance, conditions, and standards.			
14. I am comfortable writing performance objectives.			
15. I have written terminal performance objectives that state conditions and standards expected to prevail on the job.			
16. I have written enabling performance objectives that are sequenced to move learners from knowledge acquisition to practice.			

First Meeting of the Articulation Advisory Committee

The first meeting of the Articulation Advisory Committee followed the agenda. The presentation included several items recommended in the literature. An overview of the articulation project, a definition of articulation, how it would be accomplished, and the subcommittee structure were major topics. The history and philosophy of each institution and an overview of the Electronics programs were presented. Subcommittee assignments and the proposed schedule of meetings were presented to the members. A list of members and their affiliations was distributed to the membership. A chairperson and secretary were elected to serve this committee.

Samples of the agenda, outline of the presentation, subcommittee assignments, proposed schedule of meetings and timeline, and a list of members and their affiliations are presented in the following pages.

ELECTRONICS ARTICULATION ADVISORY COMMITTEE

AGENDA OF FIRST MEETING

SEPTEMBER 25, 1984

REFRESHMENTS

WELCOME AND OPENING REMARKS, DR. ROBERT KLINGLER

OVERVIEW OF THE EXEMPLARY PROGRAMS PROJECT, MR. VERNON REGISTER

INTRODUCTION OF MEMBERS

HISTORY AND PHILOSOPHY OF EACH INSTITUTION
- DELAWARE COUNTY COMMUNITY COLLEGE, DR. PAUL MC QUAY
- DELAWARE COUNTY AREA VOCATIONAL-TECHNICAL SCHOOLS, DR. ROBERT KLINGLER

OVERVIEW OF THE ARTICULATION PROJECT, MS. KAY CARTER

OBJECTIVES OF THE ELECTRONICS PROGRAM
- DELAWARE COUNTY COMMUNITY COLLEGE, MR. ARTHUR BABAIAN
- DELAWARE COUNTY AVTS, MR. ROBERT DIVINS

SELECTION OF CHAIRPERSON, SECRETARY: DR. ROBERT KLINGLER

CLOSING REMARKS, DR. PAUL MC QUAY

EVALUATION OF MEETING

ADJOURNMENT

ELECTRONICS ARTICULATION PROJECT 1984

JULY	AUGUST	SEPTEMBER
JOINT PLANNING COMMITTEE: Establish Need Develop Objectives	Review Literature Identify Resources, Personnel, Strategies Develop Structure Sequence Activities	JOINT PLANNING COMMITTEE: Organize an Advisory Committee Articulation Advisory Committee, First Meeting PROGRAM SUBCOMMITTEE: Orientation to Competency-Based Vocational Education

OCTOBER	NOVEMBER	DECEMBER
PROGRAM SUBCOMMITTEE: Select an Occupational Analysis PROGRAM SUBCOMMITTEE: Define the Scope of the Program	B/I/M SUBCOMMITTEE: Verification of Occupational Analysis, Initial Review B/I/M SUBCOMMITTEE: Verify Scope of Program PROGRAM SUBCOMMITTEE: Identification of Resources	B/I/M SUBCOMMITTEE: Verification of Occupational Analysis, Pilot Test SUPPORT SERVICES SUBCOMMITTEE: Examine Plans of Placement PROGRAM SUBCOMMITTEE: Make Recommendations Re Credit Granting

ELECTRONICS ARTICULATION PROJECT 1985

JANUARY	FEBRUARY	MARCH
B/I/M SUBCOMMITTEE Assistance with Incumbent Worker Survey	JOINT PLANNING COMMITTEE: Analyze Incumbent Worker Survey Data PROGRAM SUBCOMMITTEE: Write Terminal Performance Objectives	B/I/M SUBCOMMITTEE: Validate Terminal Performance Objectives PROGRAM SUBCOMMITTEE: Coordinate Competencies SUPPORT SERVICES SUBCOMMITTEE: Develop a Plan for Recruitment

APRIL	MAY	JUNE
PROGRAM SUBCOMMITTEE: Develop Criterion Referenced Tests B/I/M SUBCOMMITTEE: Develop Plans for Recruitment and Training ADMINISTRATIVE SUBCOMMITTEE: Develop Policy and Procedures for Articulated Program	JOINT PLANNING COMMITTEE: Present Formal Agreement to Governing Boards ALL SUBCOMMITTEES: Prepare Final Report and Evaluation of Subcommittee Articulation Advisory Committee Evaluation Meeting: Subcommittee Reports, Recommendations, Conclusions	JOINT PLANNING COMMITTEE: Disseminate Materials Developed During the Project JULY 1, 1985: IMPLEMENT ARTICULATED ELECTRONICS PROGRAM

OF THE ELECTRONICS ARTICULATION
ADVISORY COMMITTEE

September, 1984

Mr. Arthur Babaian
Electronics Faculty, Delaware County Community College

Dr. Carol G. Bronk
Director, New Programs in Technologies, Delaware County Community College

Dr. Douglas E. Burgham
Vice President of Instruction, Delaware County Community College

Dr. Frances Carter
Industry-Education Coordinator, Delaware County Intermediate Unit

Ms. Kay Carter
Articulation Specialist, Delaware County Community College

Mr. Kenneth Clark
Branch Manager, Scopus Corporation

Mr. David Deakyne
School Board Member, Wallingford-Swarthmore School District

Mr. Robert Divins
Electronics Faculty, Folcroft Area Vocational-Technical School

Mr. Harold Godwin
Professional Engineer, Philadelphia Electric Company

Mr. Frank Gorski
1984 Graduate, Electronics Program. Marple Area Vocational-Technical School

Ms. Nancy Hebrank
Electronics Lab Technician, Delaware County Community College

Mr. James Keiler
Principal, Folcroft Area Vocational-Technical School

Dr. Robert Klingler
Assistant Director of Vocational Education, Delaware County Intermediate Unit

Mr. Larry Long
Production Services Supervisor, Mars Electronics

Mr. Joseph McGinn
Electronics Faculty, Delaware County Community College

Dr. Paul McQuay
Dean, Applied Sciences, Delaware County Community College

Mr. William Mozer
Executive Secretary, Private Industry Council

Dr. Ralph J. Patrick
Cdr., United States Navy Reserve

Mr. Vernon L. Register, Coordinator, Vocational Program Support Services,
Pennsylvania Department of Education

Mrs. Ardemis S. Roy
Member, Pennsylvania Advisory Council on Vocational Education
Ms. Francia Sanders, Systems Specialist, CPU, Inc.

Mr. Robert Smith
Engineer, Scott Paper Company

Mr. Grant Snyder
Director, Assessment Center, Delaware County Community College

Mr. Joseph Walsh
Guidance Counselor, Folcroft Area Vocational-Technical School

Mr. Joseph Yankoski
Executive Director of Delaware County Office of Employment and Training

ARTICULATION ADVISORY COMMITTEE SUBCOMMITTEE REPRESENTATION

Program Subcommittee

Mr. Arthur Babaian
Mr. Robert Divins
Mr. Joseph McGinn
Mr. Thomas Judge (added 11/84; deleted 1/85)
Mr. Mike Bianco (added 3/85)

Administrative Subcommittee

Dr. Carol Bronk
Dr. Douglas Burgham
Ms. Kay Carter
Mr. James Keiler
Dr. Robert Klinger
Dr. Paul McQuay

Business/Industry/Military Subcommittee

Dr. Frances Carter
Mr. Kenneth Clark
Mr. David Deakyne
Mr. Harold Godwin
Mr. Frank Gorski
Ms. Nancy Hebrank
Mr. Larry Long
Mr. William Mozer
Dr. Ralph Patrick
Mrs. Ardemis S. Roy
Ms. Francia Sanders
Mr. Robert Smith
Mr. Joseph Yankoski

Support Services Subcommittee

Mr. Vernon Register
Mr. Grant Snyder
Mr. Joseph Walsh

OUTLINE OF PRESENTATION

Overview of the Articulation Project

- Previous Commitments of the Two Institutions (Transparency 11)*
- Definition of Articulation (Transparency 1, 2)
- Advantages of Articulation (Transparency 3)
- Enhancers of Articulation (Transparency 9)
- Objectives of the Project (Transparency 12)
- Committee Structure (Transparency 4)
- Subcommittee Assignments/Objectives (Transparencies 14, 15, 16, 17)
- Meeting Schedule and Structure (Transparency 18)
- Proposed Calendar for Project (Transparency 19, 20)
- Anticipated Outcomes (Transparency 21)

*Transparency masters are contained in the Appendix.

Orientation to Competency-Based Vocational Education

The Program Subcommittee participated in the first inservice activity. This topic was identified as a result of the needs assessment administered at the preliminary meeting of teachers.

A memorandum advising the time, place and topic of the meeting was sent to the teachers. An agenda was prepared. This inservice activity provided an overview of competency-based vocational education as the foundation of future inservice activities.

Samples of the memorandum, outline of the presentation, and agenda are presented in the following pages.

M E M O R A N D U M

TO: Art Babaian
Bob Divins
Joe McGinn

DATE: September 26, 1984

FROM: Kay Carter, Articulation Specialist

RE: Electronics Articulation Project

Thank you for your participation in the Electronics Articulation Advisory Committee Orientation Meeting. I believe we are off to a good start with such a supportive advisory committee.

Our first formal meeting will be held on October 3, 1984, at 4 p.m. The meeting will be held in Room A-119, Delaware County Community College.

The topic of this meeting is Orientation to Competency-Based Education, and will be a review of competency-based vocational education curriculum development procedures.

CC: Joint Planning Committee

ARTICULATION ADVISORY COMMITTEE

First Program Subcommittee Meeting

Wednesday, October 3, 1984, 4 p.m., DCCC

Topic: Orientation to Competency-Based Vocational Education

A G E N D A

Overview of Competency-Based Education

- Philosophy
- Definition of Terms
- Procedures

Competency-Based Vocational Education and the Articulation Process

Evaluation of Meeting

Schedule Next Meeting

Adjournment

OUTLINE OF PRESENTATION

Philosophy of Competency-Based Vocational Education (CBVE)

- Comparison of CBVE to traditional educational delivery systems

Terms

- CBVE
- Duty
- Task
- Objective
  - Terminal Performance Objective
  - Enabling Performance Objective
- Criterion-referenced test

Procedures

- Meeting Schedule (Transparency 11)*

*Transparency masters are contained in the Appendix.

Define the Scope of the Program

The Program Subcommittee participated in the second inservice activity. This topic was identified as a result of the needs assessment administered at the preliminary meeting of teachers.

A memorandum advising the time, place and topic of the meeting was sent to the teachers. An agenda was prepared. The purpose and components of the Scope were presented.

Employment opportunities and local community interest had been determined previously through the Career and Counseling Center of Delaware County Community College. Recently acquired resources were available for instruction at the Delaware County Area Vocational-Technical Schools and Delaware County Community College.

Two sources provided the necessary information needed to address the skills and knowledge needed by today's electronics technicians, employment conditions, physical requirements for workers, common tools and equipment used, anticipated changes in the occupation, opportunities for advancement, and licensing requirements. These sources were:

Dictionary of Occupational Titles (D.O.T.)

Occupational Outlook Handbook

Prior to the meeting, the Program Subcommittee received the data taken from these sources with instructions to review and highlight areas to be included in the scope. At the meeting, the participants discussed relevant information to be included in the scope. In the event agreement is not reached on the information to be contained in the Scope, the Model provides alternative actions leading to a finalized Scope.

Samples of the memorandum, an agenda, and an outline of the presentation are presented in the following pages.

M E M O R A N D U M

TO: Art Babaian
Bob Divins
Joe McGinn

DATE: October 11, 1984

FROM: Kay Carter, Articulation Specialist

RE: Electronics Articulation Project

Our next meeting will be on Wednesday, October 17, 1984, at 4 p.m. in the Intermediate Unit Offices in Media.

The purpose of this meeting will be to define the scope of the Electronics Program. I am enclosing materials related to the Electronics Technician occupation for your review prior to our meeting.

CC: Joint Planning Committee

Enclosures:

Dictionary of Occupational Titles handout
Occupational Outlook Handbook handout

Delaware County Community College
Media, Pennsylvania 19063

ARTICULATION ADVISORY COMMITTEE

Second Program Subcommittee Meeting

October 17, 1985, 4 p.m., I. U. Offices, Media, PA

Topic: Defining the Scope of the Program

A G E N D A

Define the Scope of the Electronics Program

- Review Material
- Review Occupational Outlook Handbook
- Discuss Elements of Scope

Evaluate Meeting

Schedule Next Meeting

Adjournment

OUTLINE OF PRESENTATION

Establishing the Scope of a Vocational Program (Transparency 22)*

Program Description (Transparency 23)

- Skills Needed
- Knowledge Needed
- Employment Conditions
- Physical Requirements for Workers
- Common Tools and Equipment Used
- Anticipated Changes in the Occupation
- Licensing Requirements, If Any
- Opportunities for Advancement, If Any

*Transparency masters are contained in the Appendix.

Select an Occupational Analysis

The Program Subcommittee participated in the third inservice activity. This topic was identified as a result of the needs assessment administered at the preliminary meeting of teachers.

A memorandum advising the time, place and topic of the meeting was sent to the teachers. An agenda was prepared. Materials related to occupational analyses were prepared.

The review of the related literature revealed that the Vocational-Technical Education Consortium of States (V-TECS) task list for electronics technician was the most comprehensive task analysis available. There was concern on the part of the Program Committee that this task list was too specific and that some of the tasks identified were not performed as presented in the task list. The Program Sub-Committee found other task lists too instruction-oriented and did not, in some instances, relate to what is actually performed by electronics technicians, but rather to the cognitive base electronics technicians should possess. After discussion, and with reservation, the Program Subcommittee selected the V-TECS task lists.

In the event agreement is not reached on the selection of an occupational analysis, the Model provides alternative actions leading to the development or selection of an occupational analysis.

Samples of the memorandum, an agenda, and an outline of the presentation are presented in the following pages. Information regarding occupational analyses for vocational-technical program areas can be obtained from the Pennsylvania Department of Education Resource Library.

M E M O R A N D U M

TO: Art Babaian
Bob Divins
Joe McGinn

DATE: October 24, 1984

FROM: Kay Carter, Articulation Specialist

RE: Electronics Articulation Project

Our next meeting will be on Wednesday afternoon, November 7, 1984, at 4 p.m. The meeting will be held in Room A-119 at Delaware County Community College.

The purpose of this meeting will be to finalize the Scope of the Electronics Program and select an occupational analysis for review, revision, and verification.

CC: Joint Planning Committee

ARTICULATION ADVISORY COMMITTEE

Second Program Subcommittee Meeting

Monday, November 11, 1984, 4 p.m., DCCC

Topic: Select an Occupational Analysis

A G E N D A

Review and Accept Draft of Scope of Electronics Program

Select an Occupational Analysis

- Review Available Task Analyses
- Revise Selected Analysis

Evaluate Meeting

Schedule Next Meeting

Adjournment

OUTLINE OF PRESENTATION

Define an occupational analysis.

Present sources of occupational analyses.

Discuss how occupational analyses are performed.

Present criteria for good occupational analysis.

Discussion of Materials:

- V-TECS
- Williamsport, PA
- Lincoln, NE

Discussion of Alternatives to Selecting Available Materials:

- Conduct Own Analysis
- Develop Analysis Based on Sample
- Use Advisory Committee to Develop Analysis

Verification of Occupational Analysis: Initial Review

The Business/Industry/Military Subcommittee participated in the initial review of the V-TECS occupational analysis selected by the Program Subcommittee. This initial review was conducted at a meeting of five members of this subcommittee. The entire subcommittee was not involved because the remaining members would be called upon to participate in the next step, pilot testing the occupational analysis.

Members were notified by mail of the time and place of the meeting. An appropriate agenda was developed. Necessary materials related to the initial review of the occupational analysis were prepared. These materials included V-TECS task lists containing eight duty statements and 276 tasks.

Members participating in the initial review were selected from the Business/Industry/Military Subcommittee because they represented beginning electronics technicians and supervisors of electronics technicians.

At the meeting, a "duty" was defined. The duty statements were presented to the reviewers. They were asked to respond to the following questions:

1. Were the duties performed by electronics technicians?
2. Does the wording need revision?
3. Were there other duties performed that were not included?

A "task" was then defined. Reviewers were asked to respond to five questions:

1. Were the tasks listed with the appropriate duties?
2. Were there any tasks not identified?
3. Should any tasks be deleted?
4. Were the tasks worded accurately?
5. Are these tasks performed by electronics technicians?

Samples of the notice of the meeting, an agenda, and an outline of the presentation are presented in the following pages.

November 11, 1984

XXX
XXX
XXX

Dear :

The Electronics Articulation Project is moving along on schedule. The faculties of both institutions have been working on selecting appropriate materials for your initial review prior to conducting the county-wide survey.

A meeting of the Business/Industry/Military Subcommittee of the Electronics Articulation Advisory Committee is scheduled for Tuesday, November 20, 1984, from 4:30 to 6 p.m. in Room A-450, Delaware County Community College. The purpose of this meeting is to review an occupational analysis and make revisions as necessary.

I am enclosing the Scope of the Program developed by the faculties of Delaware County Area Vocational-Technical Schools and Delaware County Community College. Please review this material prior to the meeting.

I hope that you will be able to attend this meeting and assist in updating the occupational analysis.

Sincerely,

Kay Carter
Articulation Specialist

ARTICULATION ADVISORY COMMITTEE

Business/Military/Industry Subcommittee Meeting

November 20, 1984, 4:30 - 6 p.m., A-450, DCCC

Topic: Initial Review of Occupational Analysis

A G E N D A

Refreshments

Acceptance of Scope of Program

Overview of Incumbent Worker Survey Process

- Initial
- Pilot
- Community Survey

Review Duties

Review Tasks

Adjournment

OUTLINE OF PRESENTATION

Incumbent Worker Survey Process

Define Incumbent Worker Survey

Present Overview of Process

- Teachers Select, Develop, or Revise Occupational Analysis
- Advisory Committee Members Initially Review Selected Analysis
  - Define Duty
  - Define Task
  - Review Analysis and Respond to Related Questions
  - Revise
- Advisory Committee Members Identify Electronics Technicians for Pilot Test to Determine Accuracy of Analysis
  - Revise If Necessary
- Community Incumbent Worker Survey
- Analyze returns
- Develop Terminal Performance Objectives for Tasks Performed by Incumbent Workers

Verification of an Occupational Analysis: The Pilot Test

The Business/Industry/Military Subcommittee participated in the pilot test of the occupational analysis. This pilot test was conducted by mail with three members of this subcommittee who were supervisors of electronics technicians and three of their employees who were electronics technicians.

A letter of instruction and the revised occupational analysis were sent to the selected members. They were asked to respond to two points: Does each statement make sense as written, and, if not, rewrite it. These participants were given a stamped, addressed envelope to return the revised list by a given date.

A sample of the letter of instruction is presented on the following page.

December 3, 1984

XXX
XXX
XXX

Dear

We are about to conduct a community survey of electronics technicians in the Delaware County area as part of the Electronics Articulation Project activities. The faculties of Delaware County Community College and the Delaware County Area Vocational-Technical Schools have been working diligently toward the development of an articulated curriculum.

In addition, several members of the Business/Industry/Military Subcommittee have assisted in the initial review of the task list selected for the survey. Your assistance is now requested.

I have enclosed a copy of the revised task list. Would you please examine the list and have two electronics technicians examine it and respond to this question:

Does the statement make sense as written?

If the statement does not make sense, please rewrite it next to the task.

I have enclosed a stamped addressed envelope for your convenience in returning the list to me by December 17, 1984.

Once again, thank you for your continued support of this project.

Sincerely,

Kay Carter
Articulation Specialist

Enclosures

Incumbent Worker Survey

Businesses and industries in the Delaware County area were identified as possible survey sites from information gathered from:

The Career and Counseling Center, Delaware County Community College

The Cooperative Education Office, Delaware County Area Vocational-Technical Schools

Job Partnership Training Act Office, Delaware County Intermediate Unit

Bureau of Employment Security, Delaware County Office, Media, PA

Chamber of Commerce Directory for Delaware County

Delaware, Chester and Montgomery County Telephone Directories

Electronics Articulation Advisory Committee Members

Initially, a list was prepared in alphabetical order, by company name. A telephone call was placed to each company to determine that the company was still in business, the name of the president or general manger, and whether the company employed electronics technicians.

Using the Incumbent Worker Survey form presented by Adamsky (1982), a survey instrument with directions was developed. The instrument also requested specific employment data.

Once this preliminary process of identification of possible respondents and preparation of a survey instrument was completed, 76 companies had been identified to receive the survey instrument. Advance publicity was placed in the news media. A cover letter explaining the need for the survey and how the results would be used was included. A follow-up letter was sent to those companies that did not respond by

by the requested date. A thank you letter was sent to respondents.

The incumbent worker survey proved to be a time consuming, costly endeavor that produced poor results. The revised Model provides alternative actions in the event those replicating the Model prefer one of the alternatives to a community survey of incumbent workers.

Samples of the Incumbent Worker Survey form, news releases, a cover letter to accompany the survey instrument, a follow-up letter to non-respondents, and a thank you letter to respondents are presented in the following pages.

INCUMBENT WORKER SURVEY

YOUR NAME_____ COMPANY NAME_____

YOUR JOB TITLE_____ TOTAL EMPLOYEES_____

YEARS IN PRESENT JOB_____ NUMBER OF EMPLOYEES HAVING YOUR JOB TITLE____

OCCUPATION:

DUTY:

NO.	TASK	PERFORMED BY BEGINNERS?		DIFFICULT TO LEARN?		HOW OFTEN IS THE TASK PERFORMED PER .. (ANSWER IN ONLY ONE BLOCK)				HOW IMPORTANT FOR ENTRY INTO THE OCCUPATION			IS TASK IMPORTANT FOR ADVANCEMENT IN THE OCCUPATION		
		YES	NO	YES	NO	DAY	WEEK	MONTH	YEAR	VERY	SOME	NONE	VERY	SOME	NONE

DCCC and schools survey needs of Electronics industry

Delaware County Community College and the Delaware County are vo-tech schools are conducting a community survey to determine the present and future manpower needs of the Delaware County electronics industry.

The survey is designed to provide comprehensive information on current employment and projected employment needs. The results will also assist in the development of a competency-based curriculum for the electronics programs at both institutions.

By providing occupational information on a long-term basis, the community survey will be extremely valuable to the faculty and staff in planning their curriculum, counseling students and revising and expanding course offerings.

The information gathered in the survey will be valuable to Delaware County area employers in their recruitment and training programs and in formulating future plans.

Each business or industry in the Delaware County area involved in electronics will be asked to complete a questionnaire on current and future occupational requirements. The accuracy and completness of the results of the study are dependent upon the cooperation of businesses and industries in completing these questionnaires.

Businesses are urged to cooperate by furnishing accurate and complete information when it is requested.

Results of the survey will be shared with the local community in future articles on the Electronics Articulation Project.

For additional information concerning this survey, call Kay Carter at Delaware County Community College, 359-5259

ADDENDUM 1-2

SUBURBAN & WAYNE TIMES 11/29/84

-68-

DCCC-DCVT Schools Conducting Survey

Delaware County Community College and the Delaware County Area Vocational Technical Schools are conducting a community survey to determine the present and future manpower needs of the Delaware County electronics industry. The survey is designed to provide comprehensive information on current employment and projected employment needs. The results will also assist in the development of a competency based curriculum for the electronics programs at both institutions.

FOR STUDENTS & EMPLOYERS

By providing occupational information on a long-term basis, the community survey will be valuable to the faculty and staff in planning their curriculum, counseling students and revising and expanding course offerings. The information gathered in the survey will be valuable to Delaware County area employers in their recruitment and training programs and in formulating future plans.

Each business or industry in the Delaware County are involved in electronics will be asked to complete a questionnaire on current and future occupational requirements. The accuracy and completeness of the results of the study are dependent upon the cooperation of businesses and industries in completing theeqquestionnaires. Businesses are urged to cooperate by furnishing accurate and complete information when it is requested. Results of the survey will be shared with the local community in future articles on the Electronics Articulation Project.

For additional information concerning this survey, call Kay Carter at Delaware County Community College at 359-5259.

84

85

BEST COPY AVAILABLE

Delaware County Community College
Media, Pennsylvania 19063
359-5000

February, 1985

Employers of Electronics Technicians
Delaware County and Surrounding Area

Delaware County Community College and the Delaware County Area Vocational Technical Schools are involved in a major effort to analyze the electronics technician occupation. As an employer of electronics technicians, your assistance is needed. We are conducting a survey designed to provide information concerning current and long-range occupational requirements of employers of electronics technicians. The information obtained from the survey will be used to revise and expand the electronics curriculum at both institutions. In order for the survey to be successful, information must be obtained regarding the current and prospective needs of Delaware County employers and electronics technicians.

Enclosed you will find an Employer Survey form and several Incumbent Worker Survey booklets. This material is being sent to every employer of electronics technicians in Delaware County and surrounding areas. Please take time from your busy schedule to complete the Employer Survey and have several electronics technicians complete the Incombent Worker Survey. It has been estimated that it would take approximately 30 minutes to complete. Directions are included in the booklet. A stamped envelope is enclosed for you to return the completed materials.

Your cooperation is vital to the success of this survey. The information which your company provides will be confidential and will be used for curriculum development purposes only. The information you provide will help us develop an electronics technology program centering on the skills needed to succeed in this occupation and graduates of these programs should be better prepared to embark upon careers in Delaware County and surrounding areas.

Thank you in advance for your cooperation in this community survey. Please return your completed forms by March 5, 1985.

Kay Carter - ARTICULATION SPECIALIST, ELECTRONICS ARTICULATION PROJECT

Enclosures

March 7, 1985

Employers of Electronics Technicians
Delaware County and Surrounding Areas

ELECTRONICS INDUSTRY SURVEY

Last month we sent you survey materials and requested that you have electronics technicians complete the survey forms and return them to us in an envelope that was provided. We have not yet heard from your organization.

Your cooperation is vital to the success of this survey. The information which your company provides will be confidential and will be used for curriculum development purposes only.

The information you provide will help us develop an electronics technology program centering on the skills needed to succeed in this occupation. Graduates of these programs should be better prepared to embark upon careers in Delaware County and surrounding areas.

If you have already returned the completed surveys, please accept our thanks for your valuable assistance. If you have not returned the completed surveys, won't you please do so soon.

Kay Carter - Articulation Specialist
Electronics Articulation Project

March 28, 1985

XXX
XXX
XXX

Dear :

We have received your completed incumbent worker survey and wish to express our appreciation for your valuable assistance in the recent community survey of the electronics technology occupations.

Completing the survey booklet was a time consuming task. Your input will enable us to revise our curriculum to make our electronics technology program relevant to the needs of the occupation as well as the needs of area employers.

Once again, thank you for your time and assistance in this necessary task.

Sincerely,

Kay Carter
Articulation Specialist

Analysis of the Incumbent Worker Survey

The Joint Planning Committee participated in the analysis of the incumbent worker survey. Returns were analyzed using descriptive statistics.

The Joint Planning Committee considered the amount of completed surveys to be a poor return. However, it was decided to use the information gathered in the survey to develop the curriculum since the respondents represented a wide range of electronics technology positions. The analysis indicated that 91 tasks and one duty statement were not performed by electronics technicians. The elimination of 91 tasks from an original list of 276 represented approximately one-third of the tasks on the V-TECS task lists.

The Model presents alternative actions in the event the returns are not sufficient.

It should be noted that the selection of the occupational analysis should be undertaken with great care since the validity of the emerging curriculum rests upon the appropriateness and accuracy of the occupational analysis.

Revise and Write Terminal Performance Objectives

The Program Subcommittee participated in the fourth inservice activity. A memorandum advising the time, place and topic of the meeting was sent. The topic of this inservice activity was Writing Terminal Performance Objectives.

Once the data collected through the Incumbent Worker Survey was analyzed, the validated tasks had to be written as terminal performance objectives. An appropriate agenda was developed. Necessary materials were prepared. Several sources were used to develop tasks into terminal performance objectives. These sources included the V-TECS catalogs for Electronics Technician and Industrial Technician, and other materials located through the review of the related literature and the Pennsylvania Department of Education Resource Library.

When necessary, the Program Subcommittee referred to other sources or write the objectives.

Samples of the memorandum and the agenda are presented in the following pages.

M E M O R A N D U M

TO: Art Babaian
Bob Divins
Mike Bianco
Joe McGinn

DATE: March 18, 1985

FROM: Kay Carter, Articulation Specialist

RE: Electronics Articulation Project

The results of the incumbent worker survey are in and we are ready to begin the next step, reviewing and revising terminal performance objectives for those tasks identified by the incumbent workers.

An all day meeting is scheduled for Thursday, March 28, in A-332, Delaware County Community College. We have selected an all-day format because of the amount of material to be covered. Also, this date is an inservice day for our faculty and Dr. Klingler has agreed to allow a professional day for AVTS teachers.

We will begin at 9 a.m. Lunch will be provided. I look forward to meeting with you again and working toward the completion of this project.

CC: Joint Planning Committee

ARTICULATION ADVISORY COMMITTEE

Program Subcommittee Meeting

Thursday, March 28, 1985, 9 a.m., DCCC

Topic: Review, Revise, and Write Terminal Performance Objectives

A G E N D A

Coffee

Review preliminary results of incumbent worker survey

Select terminal performance objectives for each task

- Select V-TECS or other source
- Revise V-TECS or other source
- Write objective where necessary

Lunch (1 - 2 p.m.)

Continue selecting, revising or writing TPOs

Evaluation of meeting

Adjournment

Validate Terminal Performance Objectives

The Business/Industry/Military Subcommittee participated in the validation of terminal performance objectives. All members of this subcommittee were invited by letter to attend the meeting. The objective of the meeting was to validate the terminal performance objectives developed by the Program Subcommittee. An appropriate agenda was developed. The necessary materials were prepared.

Subcommittee members were given instructions on the validation process, then reviewed the terminal performance objectives and made revisions. Revisions were made primarily to the criteria portion of the terminal performance objective. Members of the Business/Industry/Military Subcommittee stated that in some cases, the specific criteria was too limiting. Because of the wide variety of electronics equipment available today, the subcommittee indicated the criteria portion of some of the objectives be stated as follows:

"...to conform to designer specifications,"

"...to conform to manufacturer's specifications," or

"...to conform to circuit specifications."

One concern of the subcommittee related to safety. It was explained that safety was an instructional objective rather than a terminal objective and therefore implied in all terminal performance objectives. The outcome of this meeting was the validation of 175 terminal performance objectives.

Samples of the letter of invitation, the agenda, and the presentation are presented in the following pages.

April 1, 1985

XXX
XXX
XXX

Dear

The Electronics Articulation Project is moving along on target. The results of the Incumbent Worker Survey have been analyzed and the Program Committee has developed instructional objectives.

The competency-based vocational education curriculum development process requires that the curriculum be validated by business and industry representatives. The validation process insures that students are focusing on industry-related tasks.

A meeting to validate the objectives of the Electronics Technology Program is scheduled for April 9, 1985, from 4:30 to 6 p.m. We will meet in Room A-450, Delaware County Community College. I am looking forward to seeing you.

Sincerely,

Kay Carter
Articulation Specialist

ARTICULATION ADVISORY COMMITTEE

Business/Military/Industry Subcommittee Meeting

April 9, 1985, 4:30 - 6:00 p.m., Room A-450, DCCC

Topic: Validation of Terminal Performance Objectives

A G E N D A

Refreshments

Introduction to Validation Process

Review, Revise, Accept Terminal Performance Objectives

Evaluation of Meeting

Adjournment

OUTLINE OF PRESENTATION

Validation Process

- The Purpose of the Validation Process
  - Curriculum based on industry needs
  - Curriculum based on industry requirements
  - Curriculum based on industry standards
- Definition of Terminal Performance Objective (TPO)
- Components of TPO
  - Conditions
  - Task
  - Criteria

Presentation of example

Coordination of Terminal Performance Objectives

After the terminal performance objectives were validated by the Business/Industry/Military Subcommittee, the Program Subcommittee participated in the fifth inservice activity. A memorandum advising the time, place and topic of the meeting was sent. The topic of this inservice activity was Coordination of Terminal Performance Objectives. An appropriate agenda was developed. Necessary materials were prepared. Terminal performance objectives were related to nine courses in Electronics offered at Delaware County Community College. Once the terminal performance objectives were assigned and sequenced, a code number was assigned to each that included the Delaware County Community College course name, course number, and terminal performance objective number.

Each terminal performance objective was assigned to a specific course. Where no course existed to accomodate an objective, objectives were clustered and the Joint Planning Committee made the binding decision to incorporate objectives within existing courses or consider offering a new course.

Samples of the memorandum and agenda are presented on the following pages.

M E M O R A N D U M

TO: Art Babaian
Mike Bianco
Bob Divins
Joe McGinn

DATE: May 1, 1985

FROM: Kay Carter, Articulation Specialist

RE: Electronics Articulation Project

Our next meeting will be on Wednesday, May 8, 1985, at 4 p.m. in Room A-332, Delaware County Community College.

The purpose of this meeting will be to coordinate the terminal performance objectives within the college's courses.

CC: Joint Planning Committee

ARTICULATION ADVISORY COMMITTEE

Program Subcommittee Meeting

Wednesday, May 8, 1985, 4 p.m., DCCC

Topic: Coordinate Terminal Performance Objectives

A G E N D A

Refreshments

Results of TPO Validation Meeting

TPO Assignment to Specific DCCC Electronics Technology Courses

TPO Assignment Where Most Appropriate

Recommendations for Unassigned TPOs

Evaluation of Meeting

Adjournment

Develop a Plan for Recruitment

The Support Services Subcommittee participated in the development of a plan for recruitment of students into the vocational-technical school program and the community college program. Members of the Support Services Subcommittee were notified by mail of the time and place of the meeting. An appropriate agenda was developed. Necessary materials were prepared.

After discussion, it was determined that an advertising effort, directed to the general public, parents, senior high school and junior high school guidance counselors and students, as well as current and former area vocational-technical school students of the electronics program, be developed and implemented. The advertising effort would include the following target audiences:

1. General public: an informational news release containing the features of the articulated program.

2. Parents of junior and senior high school students: an informational flyer to be sent home with high school and junior high school students.

3. Guidance counselors: an informational letter and a personal visit by a representative of the Delaware County Area Vocational-Technical Schools.

4. Delaware County Area Vocational Technical School graduates of the Electronics Technology Program: an information letter containing

the features of the articulated Electronics Technology Program.

5. Current Delaware County Area Vocational-Technical School Electronics Program students: A visit by Delaware County Community College personnel explaining the program and procedures for admission.

These suggested efforts were agreed upon by all participating members and were incorporated in the procedures of the formal agreement.

Samples of the meeting notice, an agenda, and the resulting plan for recruitment are presented on the following pages.

M E M O R A N D U M

TO: Grant Snyder, Director
Assessment Center
Joseph Walsh, Guidance Counselor
Folcroft AVTS

DATE: April 1, 1985

FROM: Kay Carter, Articulation Specialist, DCCC

RE: Electronics Articulation Project

I have scheduled a meeting of the Electronics Articulation Advisory Committee's Support Services Subcommittee for April 8, 1985, in Room A-332, Delaware County Community College.

The purpose of this meeting is to develop recruitment procedures for students entering the articulated Electronics Technology Programs.

CC: Joint Planning Committee

ARTICULATION ADVISORY COMMITTEE

Support Services Subcommittee Meeting

Monday, April 8, 1985, 4 p.m., DCCC

Topic: Develop a Plan for Recruitment

A G E N D A

Presentation of Present Recruitment Procedures, DCIU Personnel

Discussion of Recruitment Possibilities

Development of Recommendations for Recruitment

Evaluation of Meeting

Adjournment

PLAN FOR RECRUITMENT OF STUDENTS INTO THE ARTICULATED PROGRAM

The Support Services Subcommittee met and formulated the following recommendations for an advertising effort for various audiences. These recommendations include:

1. General public: an informational news release containing the features of the articulated program.

2. Parents of junior and senior high school students: an informational flyer to be sent home with high school and junior high school students.

3. Guidance counselors: an informational letter and a personal visit by a representative of the Delaware County Area Vocational-Technical Schools.

4. Delaware County Area Vocational-Technical School graduates of the Electronics Technology Program: an information letter containing the features of the articulated Electronics Technology Program.

5. Current Delaware County Area Vocational-Technical School Electronics Program students: a visit by Delaware County Community College personnel explaining the program and procedures for admission.

Support Services Subcommittee
April, 1985

Develop a Plan for Placement

The Support Services Subcommittee participated in the development of a plan for placement of students from the Delaware County Area Vocational-Technical Schools who would take advantage of the articulated electronics program and request advanced placement. A letter advising the time, place and topic of the meeting was sent. An appropriate agenda was developed. Necessary materials were prepared.

The Support Services Subcommittee reviewed three plans for advanced placement found in the review of the literature (Parsons, 1980; Henderson, 1983; and Lloyd, 1979). The present structure for advanced placement by Delaware County Community College was presented.

After discussion, the Subcommittee developed a procedure for placement illustrated in Figure 5. This procedure begins at the area vocational-technical school with the instructor. The instructor attests to the fact that the student has mastered specific competencies beyond the beginner level evidenced by satisfactory completion of criterion-referenced tests. The teacher completes and signs a form letter to that effect. The letter is then submitted to the vocational-technical school principal for review and signature. The signed letter is placed in the student's high school file. This process can be repeated as the student masters the equivalent course work of Delaware County Community College. Upon application to Delaware County Community College, the student's transcript and the letter(s) are sent to the Delaware County Community College Admissions Office. The student's application is processed

PROCEDURES FOR AWARDING ADVANCED PLACEMENT STATUS TO AVTS STUDENTS AT DELAWARE COUNTY COMMUNITY COLLEGE

1. Student masters competencies equivalent to DCCC course(s)

2. Teacher completes letter attesting to course mastery

3. Principal reviews letter and data; also signs letter

4. Letter(s) is affixed to student transcript

The above process can be completed several times as the student progresses through the articulated program.

5. Student applies for admission to DCCC

6. Transcript and letter(s) are sent to DCCC Admissions

7. Student is accepted.

8. Letter(s) sent to Assessment Center, transfer credit awarded

9. College transcript issued.

10. Future college advisor notified of advanced placement.

FIGURE 5

and the letter requesting waiver is forwarded to the Delaware County Community College Assessment Center, where credit by waiver is automatically granted. The student's future advisor is notified of the advanced standing and can advise course selection accordingly. The student received a transcript indicating the waived courses.

This procedure was agreed upon by all participating members and was incorporated into the procedures of the formal agreement. A stipulation was added stating the opportunity for waiver was available for three Delaware County Community College semesters after graduation from high school. After that time, the student could take advantage of existing procedures for challenge examination, portfolio review, or CLEP options for advanced standing.

Samples of the meeting notice, agenda, and letter of credit request are presented on the following pages.

M E M O R A N D U M

TO: Grant Snyder, Director
Assessment Center
Joseph Walsh, Guidance Counselor
Folcroft AVTS

DATE: February 26, 1985

FROM: Kay Carter, Articulation Specialist, DCCC

RE: Electronics Articulation Project

I have scheduled a meeting of the Electronics Articulation Advisory Committee's Support Services Subcommittee for March 6, 1985, in Room A-332, DCCC.

At this time we will examine plans of placement utilized by other institutions involved in articulation and develop a plan for our use to facilitate the placement of secondary students in the Electronics Technology Program at community college.

CC: Joint Planning Committee

ARTICULATION ADVISORY COMMITTEE

Support Services Subcommittee Meeting

Wednesday, March 6, 1985, 4 p.m., DCCC

Topic: Develop a Plan for Placement

A G E N D A

Examine Plans for Placement Utilized by Other Institutions

Presentation of Current DCCC Procedures, Grant Snyder

Development of Procedures for Placing Students in the Articulated Electronics Program

Evaluation of Meeting

Adjournment

DELAWARE COUNTY INTERMEDIATE UNIT, VOCATIONAL-TECHNICAL EDUCATION

(Date)

Director of Admissions and Records
Delaware County Community College
Media, PA 19063

Dear Director:

The following student, _____ Social Security No. _____, has satisfactorily completed ___ competencies in our Electronics Program this date. The student's instructors have certified that he/she has satisfactorily demonstrated achievement of the competencies required by your course: _____. Based on the student's records and this certification, we recommend that credit be given for satisfactory completion of this course in accordance with the articulation agreement between Delaware Community College and the Delaware County Intermediate Unit dated _____, 1985.

This recommendation is only valid for three full Delaware County Community College semesters after the student's graduation from high school.

_____
Instructor

_____
Principal

Directions for Use:

The Vocational Instructor will submit a completed, signed form for each student meeting the qualifications certified above and submit the form to the Building Principal for concurrence. The completed form will be retained in the student's file until a release is received from the student. At that time, the form with other records will be forwarded to the Director of Admissions at Delaware County Community College.

Develop a Plan for Training in Industry

The Business/Industry/Military Subcommittee participated in the development of a plan for training in industry. A letter advising the time, place and topic of the meeting was sent. An appropriate agenda was developed.

The Business/Industry/Military Subcommittee discussed a plan for training aimed at securing training stations in industry for cooperative education placement and College Sponsored Experiential Learning (CSEL). CSEL is a component of the Electronics Technology Program and can be served as an internship in industry (non-paying) or a cooperative education placement in industry (paying).

Suggestions to increase participation by industry included:

1. Informing industry on a regular basis about the Electronics Technology Program.

1.1. Having adequate personnel available to make personal contacts with industry to secure training stations and to visit students on the job at existing training stations, and to explain how we can train to the specific needs of industry.

1.2. Developing a marketing letter informing area employers that electronics technology students are available for cooperative education placement or CSEL. A student competency profile could be included with the letter.

These suggestions were agreed upon by all participating members and were incorporated in the procedures of the formal agreement.

Samples of the meeting notice, agenda, and the plan for training in industry are presented on the following pages.

April 1, 1985

XXX
XXX
XXX

Dear :

Enclosed are the minutes from the April 9, 1985 meeting of the Business/Industry/Military Subcommittee to validate the terminal performance objectives written by the Program Subcommittee. Your recommendation to mail the terminal performance objectives in advance of future meetings is well taken and will be included in the model being developed for the state.

The final meeting of this subcommittee will take place on May 22, 1985, at 4:30 p.m. in Room A-450 at Delaware County Community College. At this time we will develop plans for recruitment and training in industry. Your valuable assistance is needed to develop viable plans to inform industry of our articulated program and our well-prepared students.

I look forward to meeting with you on May 22nd.

Sincerely,

Kay Carter
Articulation Specialist

Enclosure

ARTICULATION ADVISORY COMMITTEE

Business/Military/Industry Subcommittee Meeting

April 16, 1985, 4:30 - 6 p.m., A-450, DCCC

Topic: Discussion of Policies for Recruitment and Training in Industry

A G E N D A

Refreshments

Discussion of Policy for Recruitment from Industry

Formulation of Recommendations

Discussion of Policy for Training in Industry

Formulation of Recommendations

Evaluation of Meeting

Adjournment

RECOMMENDATIONS FOR TRAINING IN INDUSTRY

The Business/Industry/Military Subcommittee met and formulated the following recommendations for securing more and quality training stations in industry. These recommendations include:

1. Tell industry on an on-going basis about the electronics program and what is covered in the program.

2. Let industry know that we are available to address their specific needs in training and retraining.

3. Look at other cases where educational and industrial institutions are successfully working together (i.e., GE in Erie, PA).

4. Have adequate staff to make personal contacts with industry about cooperative education programs and college-sponsored experiential learning.

5. Send a letter to employers informing them of the students who will be available in the near future for internships or on-the-job training, and let employers know the specific skills of the students.

Further recommendations regarding training in industry focus on the training programs that could be provided to industry by the AVTS and the community college, and these recommendations are:

6. Let industry know what programs could be conducted on site on company time, and how programs can be tailored to employer needs.

7. Let industry know what programs could be conducted specifically for them at our facilities on worker time.

Business/Industry/Military Subcommittee
April, 1985

RECOMMENDATIONS FOR RECRUITMENT AND TRAINING IN INDUSTRY

The Business/Industry/Military Subcommittee met and formulated the following recommendations for recruitment of students from the articulated program. These recommendations include:

1. Advertise to industry what students in the articulated program can perform.

2. Point out to industry that the student is a well-rounded, educated individual.

3. Give each student a competency list to present to potential employers.

4. Advertise competencies so that industry will know what to expect from our graduates.

5. Communicate the above to industry by publicizing in company newsletters, through the Bureau of Employment Security, personnel managers, the Chamber of Commerce, etc.

Further recommendations for forming partnerships with business and industry include:

6. Involve business, industry and military representatives in the educational process by inviting representatives to address students in particular classes on a regular basis, provide seminars for particular classes, and build this feature into class time.

7. Invite industry to visit labs and classes and meet informally with the teachers.

8. Hire part-time instructors from industry.

9. Have adequate staff to coordinate this effort that would include direct contacts, mailers, visits to schools by industry, and visits by students to industry.

10. Conduct an annual open house/industry day in a central location to provide a forum for employers to explain their needs, have workshops on the articulation process, and to provide counseling on career ladders. Invite parents, 9th grade students, high school students and community college students.

Business/Industry/Military Subcommittee
April, 1985

Development of Criterion-Referenced Tests

The Program Subcommittee participated in the sixth inservice activity. A memorandum advising the time, place and topic of the meeting was sent. The topic of this inservice activity was Development of Criterion-Referenced Tests for the industry validated, coordinated terminal performance objectives. Teachers were asked to bring with them to the meeting criterion-referenced tests currently used to measure competency attainment. An appropriate agenda was developed.

The terminal performance objectives were clustered into groups within the course framework of the community college and appropriate tests were assigned. Where no test existed, the teachers referred to V-TECS materials, and the other materials identified in the review of the literature. If these materials were inappropriate, the teachers developed test items related to specific terminal performance objectives. When completed, the tests became part of the coordinated curriculum.

Samples of the memorandum and agenda are presented in the following pages.

M E M O R A N D U M

TO: Art Babaian
Mike Bianco
Bob Divins
Joe McGinn

DATE: May 15, 1985

FROM: Kay Carter, Articulation Specialist

RE: Electronics Articulation Project

The final meeting of the Program Subcommittee will take place on Tuesday, May 28, 1985, in A-332, Delaware County Community College. The meeting will begin at 4 p.m.

The topic of this meeting is the development of criterion-referenced tests for the validated, coordinated terminal performance objectives.

Please bring with you your current tests of knowledge and performance so that we may use these where appropriate.

CC: Joint Planning Committee

ARTICULATION ADVISORY COMMITTEE

Final Meeting of the Program Subcommittee

Tuesday, May 28, 1985, 4 p.m., DCCC

Topic: Development of Criterion-Referenced Tests

A G E N D A

Refreshments

Examination of available tests

Inclusion where appropriate of available tests

Examination of V-TECS and Lincoln tests

Inclusion where appropriate of V-TECS and Lincoln tests

Identification of terminal performance objectives without tests

Development of tests for these terminal performance objectives

Evaluation of meeting

Adjournment

Plan for Resource Sharing

The Administrative Subcommittee participated in the development of a plan for resource sharing. A letter advising the time and place of the meeting was sent. An appropriate agenda was developed.

The Administrative Subcommittee defined resource sharing as equipment, materials, facilities, and personnel. The subcommittee discussed possible ways resources could be shared.

After discussion, the subcommittee made the following recommendations:

1. Hire qualified area vocational-technical school instructors for part-time evening or summer teaching of the Electronics Technology Program at Delaware County Community College.

2. Where possible, jointly acquire new equipment for the Electronics Technology Program.

3. Jointly agree to the adoption of new Electronics Technology curriculum materials.

4. Meet on an annual basis with the faculties of both institutions to monitor progress of the articulated program, address problems, and make future plans for the articulated program.

These recommendations were agreed upon by all participating members and were incorporated into the procedures of the formal agreement.

Samples of the meeting notice, the agenda, and the recommendations for a plan for resource sharing are presented in the following pages.

May 22, 1985

XXX
XXX
XXX

Dear :

The articulation activities are quickly coming to an end. The Administrative Subcommittee's last activity is to develop a plan for resource sharing. I have scheduled a meeting to discuss a plan for resource sharing for Tuesday, May 28, 1985, at 2 p.m. in Room A-332, Delaware County Community College.

I look forward to meeting with you.

Sincerely,

Kay Carter
Articulation Specialist

ARTICULATION ADVISORY COMMITTEE

Meeting of the Administrative Subcommittee

Tuesday, May 29, 1985

Topic: Develop a Plan for Resource Sharing

A G E N D A

Refreshments

Definition of Resources

Discussion of Viable Sharing Arrangements

Development of Plan for Resource Sharing

Evaluation of the Meeting

Adjournment

RECOMMENDATIONS FOR A PLAN FOR RESOURCE SHARING

The Administrative Subcommittee met and formulated the following recommendations for resource sharing. These recommendations include:

1. Resource is defined as personnel, facilities, equipment, and curriculum materials.

2. Continue hiring qualified AVTS instructors to teach part-time evening and summer DCCC electronics courses.

3. Cooperate in the acquisition of equipment necessary to provide a quality, relevant program.

4. Meet on an annual basis to adopt curriculum materials.

5. Cooperate in the development of partnerships with business and industry that would provide equipment and/or personnel for specialized training.

Administrative Subcommittee
May, 1985

Formal Agreement

The Administrative Subcommittee participated in the development of a formal agreement at the conclusion of the field test activities. A letter advising the time and place of the meeting was sent. An appropriate agenda was developed.

Several formal agreements of articulation between similar institutions were examined (Henderson, 1983; Hutchison, 1979; Lloyd, 1979; and Parsons, 1980). Major components of articulation agreements were identified as parties to the agreement, program to be articulated, philosophy, purpose and rationale for articulation, procedures, persons with responsibility, and term of the agreement.

The common elements of formal agreements, gleaned from the review of the literature, were included in the agreement developed by this subcommittee. A draft version was prepared for approval of the respective committees of the governing boards of the Delaware County Intermediate Unit and the Delaware County Community College. Upon approval of these governing board committees, a finalized version was prepared for approval by the respective boards.

Samples of the meeting notice, agenda, outline of the presentation, and the articulation agreement are presented on the following pages.

Delaware County Community College
Media, Pennsylvania 19063

April 22, 1985

XXX
XXX
XXX

Dear :

I have received several subcommittee recommendations to be included in the formal agreement between Delaware County Community College and the Delaware County Area Vocational-Technical Schools relative to the Electronics Articulation Project.

I have scheduled a meeting of the Administrative Subcommittee to put together the formal agreement. The meeting will be held at Delaware County Community College on May 1, 1985, at 10 a.m. in A-332. At that time we will review several agreements of articulation discovered in the review of literature, and discuss common elements of typical agreements.

I look forward to meeting with you.

Sincerely,

Kay Carter
Articulation Specialist

Delaware County Community College
Media, Pennsylvania 19063

ARTICULATION ADVISORY COMMITTEE

Meeting of the Administrative Subcommittee

May 1, 1985

Topic: Develop a Formal Agreement

A G E N D A

Refreshments

Discussion of common elements of articulation agreements

Development of draft document incorporating plans developed by other subcommittees

Determination of board meeting dates and prior committee approval

Evaluation of meeting

Adjournment

ARTICULATION AGREEMENT
BETWEEN THE DELAWARE INTERMEDIATE UNIT AND DELAWARE COUNTY COMMUNITY COLLEGE

AGREEMENT

This agreement is between the Delaware County Intermediate Unit and Delaware County Community College.

PROGRAM

Electronics Technology

PURPOSE

The purpose of the agreement is to maximize the opportunities for the students who successfully complete the Electronics Technology Program at the Delaware County Area Vocational-Technical Schools of the Delaware County Intermediate Unit by offering advanced placement in the Electronics Technology Program offered at Delaware County Community College.

POLICY

The Board of Trustees of Delaware County Community College and the Board of School Directors of the Delaware County Intermediate Unit, support the concept of articulation as a means of improving student mobility between and among the secondary and post-secondary levels. Furthermore, the administrators and faculties are expected to take those actions appropriate to facilitate articulation between the two institutions.

RATIONALE

Delaware County Community College and the Delaware County Intermediate Unit believe they have an obligation to place students at the proper educational level to enhance student success, to recognize individual differences or accomplishments, and to avoid duplication of efforts between the Vocational-Technical Centers and the Community College.

PROCEDURES

Administrators of both institutions formed a Joint Planning Committee to recommend policy and develop procedures for formal articulation of the Electronics Technology Programs of Delaware County Area Vocational-Technical Schools of the Delaware County Intermediate Unit and Delaware County Community College, namely:

1. An Electronics Articulation Advisory Committee assisted in the development of both a process and a product of articulation.

2. The instructional faculty of both institutions met in a series of inservice workshops to complete the following activities related to the development of a competency-based Electronics Technology Program:

(a) define the scope of the program,

(b) select an occupational analysis,

(c) write terminal performance objectives

(d) coordinate curriculum, and

(e) develop criterion-referenced tests.

3. The appropriate personnel of both institutions met to develop procedures to insure a smooth transition for the student from one level of education to the next:

(a) The area vocational-technical school instructor attests to student competency attainment by signing a letter of waiver request (attached to this agreement and made a part hereof)

(b) the area vocational-technical school principal reviews the letter and any other supporting documents, and if in agreement, also signs the letter,

(c) the letter is placed in the student's file until application is made to Delaware County Community College,

(d) the student's transcript and supporting letter(s) are sent to the Delaware County Community College Office of Admissions,

(e) upon acceptance to Delaware County Community College, the letter(s) of waiver request is sent to the Delaware County Community College Assessment Center and a transcript is issued,

(f) the student's college advisor is notified of the advanced standing,

(g) there is no fee for advanced placement credit, and

(h) a grade of T (transfer) will be issued for advanced credit.

4. The guidance personnel of both institutions have met to develop recruitment procedures to publicize the articulated

Electronics Technology Program in junior and senior high schools, to parents and to students in area vocational-technical schools, including the following:

(a) informational letters to guidance counselors in junior and senior high schools,

(b) personal visits by area vocational-technical school personnel to guidance counselors in junior and senior high schools,

(c) personal visits by Delaware County Community College personnel to Electronics Technology Classes at the area vocational-technical schools, and

(d) news releases related to the articulated program in the local press.

5. Representatives of business, industry and the military met to assist with procedures to insure the Electronics Technology Program meets the training and employment needs of modern business and industry and to prepare students for successful entry into an electronics career. These representatives participated in the following activities:

(a) assistance with incumbent worker survey,

(b) validation of terminal performance objectives, and

(c) assistance in development of plans for recruitment and training in industry.

GOALS

Long range goals for the articulated Electronics Technology Program will include:

1. A minimum of one Joint Planning Committee meeting and one joint craft advisory committee meeting per year to resolve any issues that may become apparent upon implementation of the articulation model,

2. A short-term follow-up survey of the students in the articulated program to determine success, opinions and suggestions to improve the procedures of the articulated program,

3. A long-term follow-up survey of graduates of the articulated program to determine employment success, opinions, and suggestions to improve the procedures of the articulated program,

4. Cooperation in the development, implementation and evaluation of dissemination efforts,

5. Cooperation in the acquisition of new equipment necessary to provide a quality Electronics Technology program, and

6. The articulation process provided in this Agreement shall serve as the model for future articulation efforts between the Delaware County Intermediate Unit and Delaware County Community College. Individual letters of agreement developed after this Agreement will become part of this Agreement upon approval of the appropriate administrative channels within each educational system.

RESPONSIBILITY

Persons with direct responsibility to carry out the terms of this agreement are Dr. Paul McQuay, Dean, Applied Sciences Division, Delaware County Community College, and Dr. Robert Klingler, Assistant Director of Vocational-Technical Education, Delaware County Intermediate Unit.

EFFECTIVE DATE

This agreement will become effective upon approval of the Delaware County Intermediate Unit Board of School Directors and the Board of Trustees of Delaware County Community College, and upon signature of the Presidents of the respective board. Upon implementation, this agreement will continue on an annual basis until one of the parties petitions the other party to end the agreement.

SIGNATURES

_____ _____

President, Date
Delaware County Community College Board of Trustees

_____ _____

President, Date
Delaware County Intermediate Unit Board of
School Directors

_____ _____

President, Date
Delaware County Community College

_____ _____

Executive Director, Date
Delaware County Intermediate Unit

DELAWARE COUNTY INTERMEDIATE UNIT, VOCATIONAL-TECHNICAL EDUCATION

(Date)

Director of Admissions and Records
Delaware County Community College
Media, PA 19063

Dear Director:

The following student, _____ Social Security No. _____, has satisfactorily completed ___ competencies in our Electronics Program this date. The student's instructors have certified that he/she has satisfactorily demonstrated achievement of the competencies required by your course: _____. Based on the student's records and this certification, we recommend that credit be given for satisfactory completion of this course in accordance with the articulation agreement between Delaware Community College and the Delaware County Intermediate Unit dated _____, 1985.

This recommendation is only valid for three full Delaware County Community College semesters after the student's graduation from high school.

_____
Instructor

_____
Principal

Directions for Use:

The Vocational Instructor will submit a completed, signed form for each student meeting the qualifications certified above and submit the form to the Building Principal for concurrence. The completed form will be retained in the student's file until a release is received from the student. At that time, the form with other records will be forwarded to the Director of Admissions at Delaware County Community College.

Summary

In May, 1985, the Board of Trustees of Delaware County Community College accepted and signed the Articulation Agreement between the Delaware County Intermediate Unit and Delaware County Community College. The Board of School Directors of the Delaware County Intermediate Unit accepted and signed the agreement at their July, 1985 meeting. The President of Delaware County Community College and the Executive Director of the Delaware County Intermediate Unit signed the agreement at a special ceremony noting the formal agreement of articulation between the two institutions.

REFERENCES

Adamsky, R. A. Conduct an occupational analysis. Philadelphia: Temple University, Department of Vocational Education, 1981. (Bureau of Research and Evalation, Pennsylvania Department of Education Contract No. 85-9025)

Borg, W. H., and Gall, M. D. Educational Research, 3rd ed. New York: Longman, Inc., 1979.

Carter, Kathleen G. The development of an articulation model for vocational programs between a secondary area vocational-technical school and a community college in Pennsylvania. Unpublished doctoral dissertation, Temple University, 1985.

Henderson, W. E., Jr. Policies and procedures guide for articulation of occupational education programs between the School District of Greenville County and Greenville Technical College. Preliminary document, revised. June, 1983. (ERIC Document Reproduction Service No. ED 230-818)

Hutchison, E. G. A model to facilitate articulation of secondary, post-secondary vocational education programs in South Carolina. Unpublished doctoral dissertation, University of South Carolina, 1979.

Lloyd, J. H. A model for the articulation of curriculum between secondary and post-secondary vocational education in Georgia. Unpublished doctoral dissertation, Georgia State University, 1979.

Parsons, M. H. Cooperation in vocational education programs: articulation is for real! Paper presented at the Kellogg Institute on Staff Development. Austin, New York, May 28, 1980. (ERIC Document Reproduction Service No. ED 188 696)

Stufflebeam, D. L., et al. Educational evaluation and decision making. Itasca, IL: Peacock, 1971.

Weis, S. F. (Chairman). Pennsylvania advisory council on vocational education. Fourteenth annual evaluation report, 1983.

BIBLIOGRAPHY

Adamsky, R. A. Conduct an occupational analysis. Philadelphia: Temple University, Department of Vocational Education, 1981. (Bureau of Research and Evaluation, Pennsylvania Department of Education Contract No. 85-9025)

Borg, W. H., and Gall, M. D. Educational Research, 3rd ed. New York: Longman, Inc., 1979.

Borg, W. H. Research and development as a vehicle for improving teacher competence. February, 1973. (ERIC Document Reproduction Service No. ED 076-584)

Borich, G. D., and Jemelka, R. P. Definitions of program evaluation and their relation to instructional design. Educational technology. August, 1981, 31-38.

Bushnell, D. S. Closing the gap and eliminating the overlap. Voc. Ed. Journal of the American Vocational Association, April, 1978, 53 (4), 21-23, 26.

Bushnell, D. S. Education and training: A guide to interinstitutional cooperation. Final report. American Association of Community and Junior Colleges. Washington, D.C. 1978.

Carter, Kathleen G. The development of an articulation model for vocational programs between a secondary area vocational-technical school and a community college in Pennsylvania. Unpublished doctoral dissertation, Temple University, 1985.

Christian, N. K. (ed.) Education in the 80's: Vocational education. National Education Association. Washington, D. C., 1982.

Competencies for Articulation, Electronics. A Project of the Lincoln Public Schools Educational Service Unit No. 6 and Southeast Community College, 1978.

Cummings, D. C. The major components of articulation in trade and industrial education among the public secondary schools and post-secondary education in the state of Utah. Unpublished doctoral dissertation, Utah State University, 1980.

Dunn, J. A. (Principal investigator). American Institute for Research. Procedures for conducting evaluations of vocational education. 1976.

Emerson, N. H. An approach to a one-school-year technical/occupational program articulation between the secondary and post-secondary levels. Dallas County Community College District. Texas, 1980. (ERIC Document Reporduction Service No. 212-299)

Encyclopedia of Education, 2, (Cari-Danc). Crowell-Collier Educational Corporation, 1971.

Evans, C. M. A survey of the articulation efforts between the public secondary schools and post-secondary occupational programs in Alabama. Unpublished doctoral dissertation, University of Alabama, 1981.

Finch, C. R., and Crunkilton, J. R. Curriculum development in vocational and technical education. Boston: Allyn and Bacon, 1979.

Good, C. V. Essentials of educational research, 2nd ed. New York: Appleton-Century-Crofts, 1966.

Good, C. V. Essentials of educational research, 2nd ed. New York: Appleton-Century-Crofts, 1972.

Good, C. V. (ed.) Dictionary of education. New York: McGraw-Hill Book Company, 1973.

A handbook of the practices of articulation of occupational education programs between secondary and post-secondary institutions in New York State, 1978. (ERIC Document Reproduction Service No. ED 181 185)

Henderson, W. E., Jr. Policies and procedures guide for articulation of occupational education programs between the School District of Greenville County and Greenville Technical College. Preliminary document, revised. June, 1983. (ERIC Document Reproduction Service No. ED 230-818)

Houston, J. E. (ed.) Thesaurus of ERIC Descriptors, 10th ed., Arizona: Onyx Press, 1984.

Humulock, A. A., Jr. A study to develop a model to facilitate articulation of occupational programs between public secondary vocational schools and public community colleges in Maryland. Unpublished doctoral dissertation, University of Maryland, 1979.

Hutchison, E. G. A model to facilitate articulation of secondary, post-secondary vocational education programs in South Carolina. Unpublished doctoral dissertation, University of South Carolina, 1979.

Jackson, T. L. Competency based testing as a method of formulating program articulation between two-year vocational-technical colleges and four year academic universities. Unpublished doctoral dissertation, Ball State University, 1978.

Kauer, K. U. Articulation among Missouri area vocational schools and community colleges as perceived by vocational administrators. Unpublished doctoral dissertation, University of Missouri-Columbia, 1979.

Knight, M. M. A study of vocational curriculum articulation practices in Florida, based on two case studies. Unpublished doctoral dissertation, Florida State University, 1982.

Knight, M. M. Meeting the high technology challenge through articulation: A discussion of inhibitors and enhancers of vocational curriculum articulation. Paper presented at the 63rd annual convention of American Association of Community and Junior Colleges. New Orleans, LA, April 25, 1983.

Knight, M. Curriculum articulation as a means of meeting the high technology challenge. Paper presented at the American Vocational Association convention, Anaheim, CA, December 4, 1983. (ERIC Document Reproduction Service No. ED 239 101)

Kraska, M. Curriculum articulation between secondary and post-secondary vocational and technical education programs. Journal of Industrial Teacher Education, 1980, 17 (2) 53-61.

Lloyd, J. H. A model for the articulation of curriculum between secondary and post-secondary vocational education in Georgia. Unpublished doctoral dissertation, Georgia State University, 1979.

Madaus, G. F., Scriven, M. S. and Stufflebeam, D. L. (eds.). Evaluation models: Viewpoints on education and human services evaluation. Boston: Kluwer-Nijhoff Publishing, 1983.

Moore, R. Articulation between Kanawha County and Putnam County Vocational Schools and the Community College Component at West Virginia State College. West Virginia State College, 1981. (ERIC Document Reproduction Service No. ED 203 135)

Myers, B. and others. Community college/vocational technical school articulation: The third party method. Luzerne County (PA) Community College, 1978.

Nadolski, M. Industrial education, articulation model 7-14. American River College, CA, 1982.

Norton, R. E., et al. The development of competency-based instructional materials for the preparation of local administrators of secondary and post-secondary vocational education. Center for Vocational Education, Ohio State University. Columbus, OH, 1977.

Owen, H. J. Technical supply and demand: How can community and technical colleges help fill the need? Council for Occupational Education Monograph Series, 1 (1), 1984.

Parsons, M. H. Cooperation in vocational education programs: articulation is for real! Paper presented at the Kellogg Institute on Staff Development. Austin, New York, May 28, 1980. (ERIC Document Reproduction Service No. ED 188 696)

Pennsylvania Guidelines, Curriculum priorities. (Bureau of Vocational Education, Pennsylvania Department of Education) 1983.

Philbin, A. and others. The big issues. Community and Junior College Journal, 1982, 52, (7), 23-25.

Phillips, H. D. Sr. An analysis of articulation practices and problems as perceived by Tennessee occupational administrators, between secondary and post-secondary programs. The University of Tennessee, 1978.

Sax, G. Foundations of educational research. Englewood Cliffs, New Jersey: Prentice-Hall, 1979.

Snelbecker, G. E. Learning theory, instructional theory, and psycho-educational design. New York: McGraw-Hill Book Company, 1974.

Southern Association of Colleges and Schools Commission on Occupational Education Institutions. Vocational-Technical Education Consortium of States. Occupational inventory for electronics technician, duties and tasks. Project 1355 Survey Data Analysis, 1979.

Southern Association of Colleges and Schools Commission on Occupational Education Institutions. Vocational-Technical Education Consortium of States. Occupational inventory for industrial electrician, duties and tasks. Project 1453 Survey Data Analysis, 1979.

Stufflebeam, D. L., et al. Educational evaluation and decision making. Itasca, IL: Peacock, 1971.

Suver, J. A., et al. Development of a curriculum articulation model between vocational-technical institutes, community colleges, school districts. A regional cooperative resident project. Final report, 1979. (ERIC Document Reproduction Service No. ED 134 801)

Vanek, C. Project MAVE - Model for articulated vocational education. Final report. Illinois State Office of Education, Springfield, Division of Adult Vocational and Technical Education. June, 1979.

Weis, S. F. (Chairman). Pennsylvania advisory council on vocational education. Fourteenth annual evaluation report, 1983.

Whitworth, L. L. Task level articulation in welding between the Community College of Allegheny County, College Center North, and Parkway West Area Technical School. Final report. Allegheny County Community College, Pittsburgh, PA 1979. (ERIC Document Reproduction Service No. ED 192-853)

Wichowski, C. Factors affecting the coordination of programs and resources between community college and AVTS. Community junior college research quarterly. April-June, 1980, 4 (3), 231-39.

Williamsport Area Community College. Task List for Electronics Technology, 1982.

Woelfer, C. The articulation of occupational education programs between secondary schools and community colleges/technical institutes project. September, 1974 - July 31, 1978. Final Report. NC State Department of Community Colleges, Raleigh, 1978. (ERIC Document Reproduction Service No. ED 164-887)

Woelfer, C. O., et al. Vocational education curriculum articulation in North Carolina. Community College Review, Summer, 1980, 8 (1), 38-44.

APPENDIX

ARTICULATION IS A PLANNED PROCESS WHICH FACILITATES THE TRANSITION OF STUDENTS BETWEEN THE SECONDARY AND POST-SECONDARY LEVELS AND ALLOWS THE STUDENT'S CONTINUITY WITHOUT HINDERANCE THROUGH LEVELS OF EDUCATION.

NATIONAL ADVISORY
COUNCIL OF VOCATIONAL
EDUCATION (1976)

ARTICULATION IS AN ACTION RESULTING FROM POLICIES AND PROCEDURES USED TO:

1. COORDINATE PROGRAMS BETWEEN TWO OR MORE INSTITUTIONS
2. IDENTIFY SKILLS AND RELATED TECHNICAL INFORMATION NEEDED BY STUDENTS TO MOVE THROUGH THE VARIOUS LEVELS
3. TRANSFER THE STUDENT FROM ONE LEVEL TO ANOTHER WITHOUT UNNECESSARY ADMINISTRATIVE DELAY OR DUPLICATION OF EFFORT
4. IMPROVE COMMUNICATION AND COOPERATION BETWEEN DIFFERENT SYSTEMS IN A COMMUNITY THAT SHARES THE SAME PROGRAM

WOELFER (1978)

ADVANTAGES OF ARTICULATION

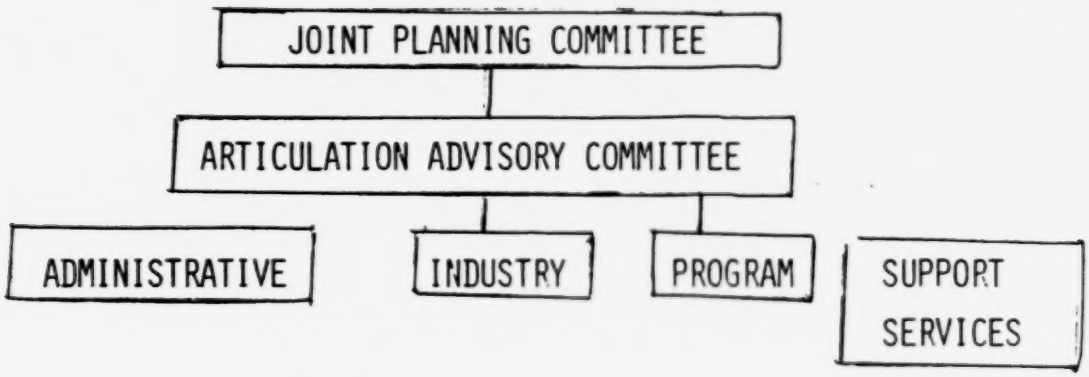
INDIVIDUAL

INSTITUTIONAL

ECONOMIC

3

COMMITTEE STRUCTURE



STAGES OF THE ARTICULATION PROCESS

PLANNING
COMMITTEE FORMATION
VERIFICATION OF COMPETENCIES
POLICY AND PROCEDURES
CURRICULUM COORDINATION
STUDENT PLACEMENT PLAN
RECRUITMENT
FORMAL AGREEMENT
EVALUATION OF PROCESS
IMPLEMENTATION
FOLLOW-UP STUDIES

PROGRAM SUBCOMMITTEE

MEMBERS:

ELECTRONICS FACULTY, AVTS AND DCCC

RESPONSIBILITIES:

SELECT AN OCCUPATIONAL ANALYSIS

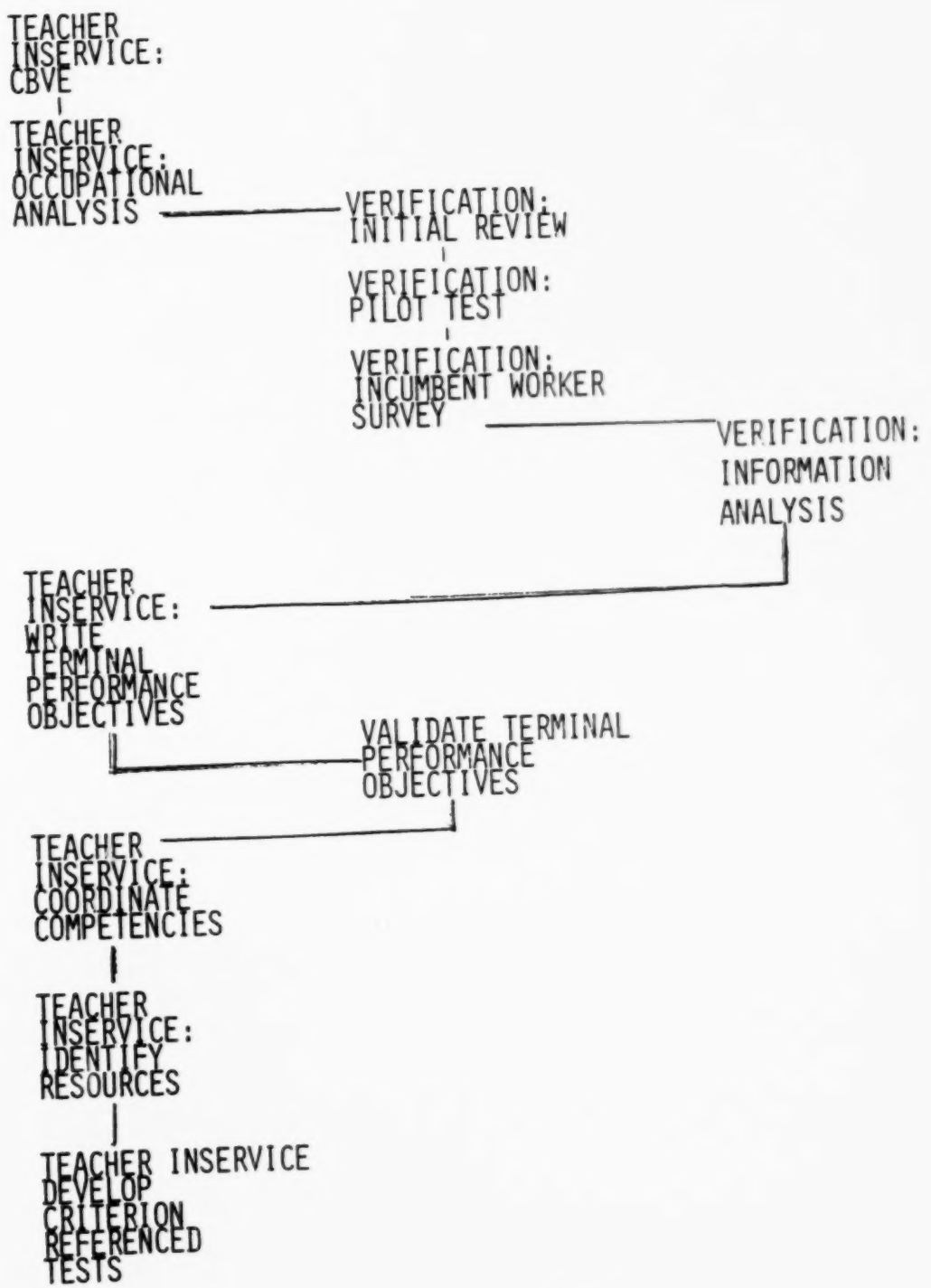
WRITE TERMINAL PERFORMANCE OBJECTIVES

MAKE RECOMMENDATIONS REGARDING METHOD OF CREDIT GRANTING

COORDINATE CURRICULUM

WRITE CRITERION-REFERENCED TESTS

CURRICULUM DEVELOPMENT/COORDINATION ACTIVITIES


TEACHER INSERVICE: CBVE
TEACHER INSERVICE: OCCUPATIONAL ANALYSIS
VERIFICATION: INITIAL REVIEW
VERIFICATION: PILOT TEST
VERIFICATION: INCUMBENT WORKER SURVEY
VERIFICATION: INFORMATION ANALYSIS
TEACHER INSERVICE: WRITE TERMINAL PERFORMANCE OBJECTIVES
VALIDATE TERMINAL PERFORMANCE OBJECTIVES
TEACHER INSERVICE: COORDINATE COMPETENCIES
TEACHER INSERVICE: IDENTIFY RESOURCES
TEACHER INSERVICE DEVELOP CRITERION REFERENCED TESTS

INHIBITORS

ATTITUDES OF SUPERIORITY

RELUCTANCE TO RELINQUISH "TURF"

VESTED INTERESTS OF ADMINISTRATORS

LACK OF RECOGNITION OF ALTERNATIVE LEARNING

SUCCESSFUL ARTICULATION IS THE RESULT OF THE

COORDINATING OF CURRICULUM BY FACULTY WHO ARE:

1. COMMITTED TO ARTICULATION
2. FREE OF TRADITIONAL PREJUDICES
3. PREOCCUPIED WITH MAKING DECISIONS WHICH ARE IN THE BEST INTEREST OF ALL STUDENTS

WEST VA.

DELAWARE COUNTY COMMUNITY COLLEGE AND DELAWARE COUNTY

AREA VOCATIONAL-TECHNICAL SCHOOLS

INTERGENERATIONAL PROGRAMMING
ADULT VOCATIONAL TRAINING
CUSTOMIZED JOB TRAINING
CRAFT ADVISORY COMMITTEES
EQUIPMENT
FACILITIES
STAFF

OBJECTIVES OF THE ARTICULATION PROCESS

TO IMPROVE COORDINATION OF VOCATIONAL EDUCATION PROGRAMS BETWEEN THE AREA VOCATIONAL TECHNICAL SCHOOL AND THE COMMUNITY COLLEGE

TO ESTABLISH POLICY AND PROCEDURES FOR ARTICULATION OF THE ELECTRONICS PROGRAMS AT DCCC AND THE DELAWARE COUNTY AVTS SYSTEM

TO CONDUCT INSERVICE TRAINING SESSIONS FOR AVTS AND DCCC PERSONNEL

TO INTEGRATE THE COMPETENCY-BASED INSTRUCTIONAL OBJECTIVES OF THE ELECTRONICS PROGRAM OF THE TWO INSTITUTIONS AND THE TASKS IDENTIFIED FOR ENTRY LEVEL TECHNICIANS IN OUR GROWING, LOCAL ELECTRONICS INDUSTRY

TO PREPARE A PLAN FOR COOPERATIVE USE OF FACILITIES, EQUIPMENT AND STAFF AT THE EDUCATIONAL AND INDUSTRIAL LOCATIONS

TO INTEGRATE INTO THE ARTICULATION PROCESS EMPLOYER ASSISTANCE IN RECRUITMENT AND TRAINING

TO EVALUATE THE ARTICULATION PROCESS BASED ON INPUT FROM ADVISORY COMMITTEE MEMBERS, INSTITUTIONAL PERSONNEL, STUDENTS AND EMPLOYERS

INDUSTRY SUBCOMMITTEE

RESPONSIBILITIES:

VERIFICATION OF TASKS
VALIDATION OF TERMINAL PERFORMANCE OBJECTIVES
ASSISTANCE WITH RECRUITMENT

ASSISTANCE WITH TRAINING

ADMINISTRATIVE SUBCOMMITTEE

RESPONSIBILITIES:

DEVELOP POLICY AND PROCEDURES

PRESENT FORMAL AGREEMENT TO GOVERNING BOARDS

ASSIST WITH OTHER SUBCOMMITTEE TASKS

EVALUATE PROCESS OF ARTICULATION

PROGRAM SUBCOMMITTEE

RESPONSIBILITIES

VERIFICATION OF TASKS
VALIDATION OF TERMINAL PERFORMANCE OBJECTIVES

ASSISTANCE WITH RECRUITMENT

ASSISTANCE WITH TRAINING

PROGRAM SUBCOMMITTEE

RESPONSIBILITIES:

SELECT AN OCCUPATIONAL ANALYSIS
WRITE TERMINAL PERFORMANCE OBJECTIVES
MAKE RECOMMENDATIONS REGARDING METHOD OF CREDIT GRANTING
COORDINATE CURRICULUM
WRITE CRITERION-REFERENCED TESTS

SUPPORT SERVICES SUBCOMMITTEE

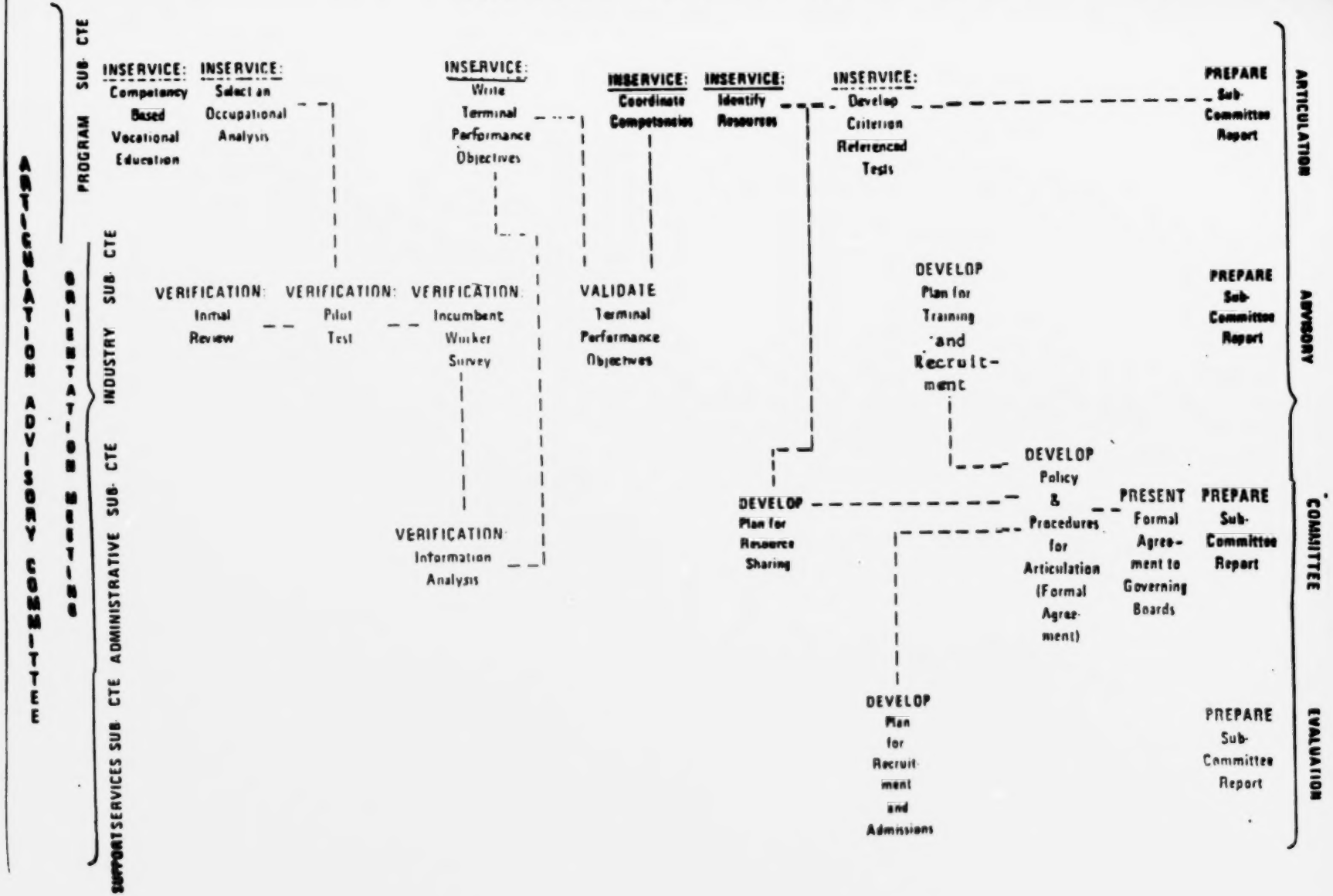
RESPONSIBILITIES:

DEVELOP A PLAN FOR RECRUITMENT

DEVELOP PLACEMENT PROCEDURES

ADVERTISE THE PROGRAM

SUGGESTED TIMELINE: 10 MONTHS



JANUARY	FEBRUARY	MARCH
PROGRAM COMMITTEE: WRITE TERMINAL PERFORMANCE OBJECTIVES **B/I/M SUBCOMMITTEE: VALIDATE TERMINAL PERFORMANCE OBJECTIVES** **PROGRAM COMMITTEE: COORDINATE COMPETENCIES** **SUPPORT SERVICES SUBCOMMITTEE: DEVELOP PLAN FOR RECRUITMENT**	PROGRAM COMMITTEE: DEVELOP CRITERION REFERENCED TESTS B/I/M SUBCOMMITTEE: DEVELOP PLANS FOR RECRUITMENT AND TRAINING ADMINISTRATIVE SUBCOMMITTEE: DEVELOP POLICY AND PROCEDURES FOR ARTICULATED PROGRAM	JOINT PLANNING COMMITTEE: PRESENT FORMAL AGREEMENT TO GOVERNING BOARDS
APRIL	**MAY**	**JUNE**
JOINT PLANNING COMMITTEE: PRESENT FORMAL AGREEMENT TO GOVERNING BOARDS ALL SUBCOMMITTEE: PREPARE FINAL REPORT OF SUBCOMMITTEE	ARTICULATION ADVISORY COMMITTEE: EVALUATION MEETING, SUBCOMITTEE REPORTS, RECOMMENDATIONS, CONCLUSIONS	**JOINT PLANNING COMMITTEE: DISSEMINATE MATERIALS DEVELOPED DURING PROJECT** **JULY 1, 1985:** IMPLEMENT ARTICULATED ELECTRONICS PROGRAM

JULY	AUGUST	SEPTEMBER
JOINT PLANNING COMMITTEE: ESTABLISH NEED DEVELOP OBJECTIVES	REVIEW LITERATURE IDENTIFY RESOURCES, PERSONNEL, STRATEGIES DEVELOP STRUCTURE SEQUENCE ACTIVITIES	JOINT PLANNING COMMITTEE: ORGANIZE AN ADVISORY COMMITTEE ARTICULATION ADVISORY COMMITTEE FIRST MEETING PROGRAM SUBCOMMITTEE: ORIENTATION TO COMPETENCY-BASED VOCATIONAL EDUCATION, ARTICULATION

OCTOBER	NOVEMBER	DECEMBER
PROGRAM SUBCOMMITTEE: SELECT AN OCCUPATIONAL ANALYSIS VERIFICATION OF OCCUPATIONAL ANALYSIS REVIEW (B/I/M ASSISTANCE) PROGRAM SUBCOMMITTEE: IDENTIFICATION OF RESOURCES VERIFICATION OF OCCUPATIONAL ANALYSIS PILOT (B/I/M ASSISTANCE)	SUPPORT SERVICES SUBCOMMITTEE: DEVELOP PLAN OF PLACEMENT PROCEDURES INCUMBENT WORKER SURVEY (B/I/M ASSISTANCE) PROGRAM SUBCOMMITTEE: MAKE RECOMMENDATIONS REGARDING CREDIT GRANTING	JOINT PLANNING COMMITTEE: ANALYZE INCUMBENT WORKER SURVEY DATA PROGRAM SUBCOMMITTEE: WRITE TERMINAL PERFORMANCE OBJECTIVE

Delaware County Community College is committed to assuring equal opportunity to all persons and does not discriminate on the basis of race, color, sex, religion, ancestry, national origin, age or applicable handicap in its educational programs, activities, admissions, or employment practices as required by Title IX of the Educational Amendment of 1972, Section 504 of the Rehabilitation Act of 1973, and other applicable statutes. Inquiries concerning Title IX and/or 504 Compliance should be referred to: Dr. Ross Ann Craig, Dean of Students, Room A-226, 359-5320 and/or Mr. James Bryan, Director of Personnel, Room L-313, 359-5300.

ERIC Clearinghouse for
Junior Colleges
APR 17 1987